

# COMPUTERWORLD

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Page 127.

## Mainframe outlook stays Blue

BY ROSEMARY HAMILTON  
CW STAFF

The face of the large-systems market may soon get a new look now that Digital Equipment Corp. and Tandem Computers, Inc. have introduced mainframes. But it seems the heart of that market still belongs to IBM.

Based on interviews with IBM shops last week, a slight shift in large-system sales may take place in the wake of DEC's VAX 9000 announcement (see story page 128) and Tandem's earlier announcement of its Cyclone system (CW, Oct. 16). Users said they would consider those systems for specialized applications that require the horsepower of a mainframe and are not directly tied to the core of their operations.

However, when it comes to their production applications, users said there is no chance they

### Mainframe domination

*For years, IBM has been able to draw IBM's lead on the U.S. mainframe market*



\*Unsys' installed base represents combined Burroughs and Sperry lines

Source: International Data Corporation

will budge from their long-term investments in IBM 370s. That environment continued to evolve last week with the introduction of the J series 3090s (see

story page 129).

"If they want to compete at the high end, then they have some hurdles," said David Moore, a senior vice-president of information processing at Mellon Bank in Pittsburgh. "All my big systems have been written for the IBM system. It would not be easy to change them."

On the other hand, Moore has a number of VAX systems installed for dedicated operations such as mortgage processing. If that and other VAX-based application areas expand, a logical move would be to the VAX 9000, he said.

Moore is typical of many users who are willing to look beyond IBM and welcome the power that Tandem and DEC now offer. But they also draw a clear line between specialized and day-to-day operations.

"Our main train system runs

Continued on page 129

## Going gets tougher for Unisys

**Cuts fuel staggering \$648 million shortfall**

BY NELL MARGOLIS  
CW STAFF

**BLUE BELL, Pa.** — Unisys Corp. reported a staggering \$648.2 million net loss for its third quarter last week on revenue up a scant 4% to \$2.35 billion. The company cited steeper-than-expected costs of its sweeping production-line transition and corporate reorganization as causing the setback.

This rationale has resounded throughout the upper echelons of the computer industry during the past year. Companies have struggled to support the product lines that in many cases carried them to the top while simultaneously embracing new technologies critical to major status or even survival in the marketplace of the 1990s.

Last week, analysts and users appeared inclined to accept Unisys' explanation as a reason rather than a rationalization and to wait for the \$10 billion firm to emerge on the sunny side of its grueling transition period.

"I think I'd be concerned if Unisys' problems were unique, but we're seeing declines like this pretty much across the board in the computer industry," said Gerry Connelly, MIS

Continued on page 4

## Defense czar snaps IS whip

BY MITCH BETTS  
CW STAFF

**WASHINGTON, D.C.** — Deputy Secretary of Defense Donald J. Atwood has ordered a sweeping program to standardize and consolidate the department's many redundant information systems in an effort to make the huge U.S. Department of Defense run more like a modern business.

"The successes in industry in developing integrated management information systems suggest that much can be done in DOD," Atwood said in a recent memo, apparently drawing on his experience as an executive at General Motors Corp. The memo was circulated throughout the department.

Atwood's program, called DOD Computer Information

Continued on page 127

### Earthquake aftermath



• Telecommuting becomes a desirable option as firms contend with transportation disruptions; however, selling that option to upper management may be the toughest obstacle.

• It was a day when mainframes learned how to walk. Computer systems became moving objects as floors shook, but systems vendors report that most customer operations are up and running.

• Philippe Kahn's office is a shambles. One of three Borland International headquarters buildings was evacuated as the firm rocked just three miles from the quake's epicenter.

Stories, page 6.

### TOP 10 GRADUATE PROGRAMS

## MIT, Georgia State lead IS honor roll

BY MICHAEL  
SULLIVAN-TRAINOR  
CW STAFF

**A**fter two decades of trying to blend technical and managerial expertise into an IS graduate program, MIT's Sloan School of Management is finally receiving accolades for flat that in the information systems community.

More than 250 corporate recruiters, academics and IS executives selected MIT as the

best IS graduate school program in the U.S. in an exclusive *Computerworld* survey.

The survey sought out the 10 best U.S. graduate schools with IS majors or concentrations. Two schools, Harvard University and Stanford University, were rated highly but did not make the top 10 because they do not have a specific IS major.

Each school on the list is striving to provide a program encompassing technical and

managerial skills and business knowledge. Such a program requires tremendous resources, and none of the schools have chosen the same path to success. The following list represents the survey's results, with the schools ranked in order.

### The MIT story

The list of faculty members at MIT reads like a who's who of renowned IS thinkers.

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## Quotable

**"I it's a case of David against Goliath, except the big guy has the sling-shot."**

CHARLES McCAG  
MUTUAL BENEFIT LIFE  
INSURANCE CO.

*Speaking on IS' challenge in handling the massive corporate bureaucracy in an effort to change unworkable business practices. See story page 8.*

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# EXECUTIVE BRIEFING

■ Core mainframe operations will remain true Blue in most firms despite the current challenges of the VAX 9000 and the Tandem Cyclone. However, information systems executives see plenty of opportunity for IBM competitors to run dedicated applications, such as Mellon Bank's mortgage processing and Teco Energy's high-volume transactions. Page 1. DEC also did some significant software tweaking, offering new features in RDB and VMS. Page 128. Meanwhile, IBM responded with 16 new J series 3090s, but users were more excited about Hyperbatch, souped-up batch processing software designed to speed batch throughput by as much as 60%. Page 129.

■ Consultant Michael Hammer exhorted 450 IS executives to help re-engineer their companies' fundamental ways of doing business at Hammer Forum '89. But Hammer and executives from several firms that have achieved such changes warn that challenging the existing management bureaucracy takes time, money, all-out commitment and the constant involvement of senior management. Page 8.

■ The San Francisco earthquake shook the cobwebs of some area firms' plans for telecommuting, but others are still skeptical on it. California legislature is expected to consider tax breaks for firms allowing telecommuting and other flexible work options. Page 6.

■ Swiss pharmaceuticals giant Ciba-Geigy prescribes IS moving out to its functional divisions. However, the firm retains some centralized IS functions in what it calls a hybrid approach. Page 65.

■ Don't worry about being Next in line for many corporate applications on the Next machine. Last month's operating system debut gave developers a start, but analysts say late 1990 is a reasonable date for an array of Next business applications. Page 41.

■ On-site this week: The ads for the Nissan Infiniti may not have much information about the new luxury sedan, but 40 to 50 Infiniti dealers will be exchanging plenty of information on a VSAT network linked to an IBM AS/400. Page 55.

■ 'No Cobol required' could be the theme song at Hayward, Calif.-based House Express, a 12-store book, tapes and electronics chain. Users of the Microsoft Excel spreadsheet are able to access relevant sales information from the central database through SQL Server for customers through merchandise reports. Page 43.

■ Migration is a constant way of life at Columbus, Ohio's, Huntington National Bank, which is plunging into CASE technology during its transition from Unisys to IBM mainframes. Page 29.

■ Once Unix was the only show in town for users interested in interoperability, but now choices are expanding while standards squabbles frustrate Unix users. It's not yet certain how much these factors will stunt Unix's growth, but it's clear that opportunities have been missed. Page 75.

■ Despite the doom and gloom among most major systems vendors, niche players large and small are finding financial success in the computer industry. Teradata, Mentor Graphics and Conner Peripherals were among those checking in last week with heartening third-quarter earnings results. Page 99.

■ Leading edge or bleeding edge? Some IS managers feel they'll get a career boost by applying new breeds of high-performance hardware to traditional business applications. They've tried parallel processing minicomputers to book hotel reservations. Page 108.

**A**s you wrestle with your meager IS budget plans... Despite the Tax Reform Act of 1986, a citizen watchdog group has identified a group of seven diverse corporations that paid no federal income taxes in 1988 despite earning collective profits of \$1.2 billion. Not only did they not pay any taxes, but six of them actually received a total of \$120 million in refunds and credits from their dear uncle in Washington. The group concludes that reform is working, however, as companies are starting to pay a larger share of the taxes they are legally required to pay. As Soviet emigre comic Yakov Smirniov says, 'What a country!'

## UPDATE

Unix put the bloom on the interoperability idea, but 'open' proprietary systems threaten its spot. Page 75.



Dennis Connors, VP of MIS at Merwyn's department store chain, has quickened inventory turnover, thanks to EDI. Page 65.

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# 'Lite' idea shakes up interface brew

BY PATRICIA KEEFE  
OF IBM

If Cool Hand Luke were in the midst of today's graphical user interface war, the operative word might well be "What we have here is a failure to negotiate."

In this case, defiant users are snubbing OS/2 for DOS, thanks in part to its interface, Microsoft Corp.'s Windows. As a result, a market schism has grown that could strain longtime alliances.

While Microsoft works to finish Windows 3.0, which will provide users with even less incentive to move to OS/2 and the Presentation Manager interface, IBM and a number of developers are mulling over a competing product designed to bridge the two environments.

One source briefed by IBM suggested that what is being variously called PM Lite or PM Junior is little more than a leaked brainstrom at the moment. Yet IBM reportedly plans to hit the road in an effort to drum up support for the idea.

Sources said PM Lite is a sub-

set of its programming calls that would run under DOS and provide multitasking and a consistent graphical interface.

It allegedly would run DOS applications unmodified, allowing developers to support both worlds with one package or, at the very least, substantially reduce the work required in porting software. If so, this could cut costs for users.

There is quite a lot of skepticism among developers about whether PM Lite will, never mind see the light of day.

If IBM goes ahead with the product, it will collide head-on with Windows 3.0, pitting IBM against longtime partner Microsoft. Steve Ballmer, Microsoft's senior vice-president of software, is not enthusiastic. "It would not seem like a smart thing for IBM to do without discussing [it with Microsoft] and getting our buy-in," he said, adding, "This is something that could hurt OS/2 and IBM."

How? By escalating the confusion in a market already struggling with two choices. If this happens, migration to PM will be

delayed, some analysts and developers claimed. Basil Maloney, executive director of the Windows Presentation Manager Association, said group members are happy with Windows and unlikely to welcome PM Lite.

But that is not how developers at Lotus Development Corp. and Borland International see it. From their perspective, "tastes great, less filling" is an apt description for PM Lite. A downsized version of PM would offer the same functionality used by most PM applications, theorized David Reed, a Lotus vice-president.

## Gupta SQLbase shoots for portable front end

BY PATRICIA KEEFE  
OF IBM

MENLO PARK, Calif. — Gupta Technologies, Inc. said last week it will unwrap Version 4 of its SQLbase SQL Server engine on Wednesday, along with plans to bridge to rival servers from Oracle Corp. and IBM. Gupta also plans a port to a Unix-based Sun Microsystems, Inc. server.

In addition, Gupta will be taking a swipe at Microsoft Corp.'s recent SQL benchmark, with the release of a set of benchmarks audited by CompuLink, a database consultant in Chicago, which pit SQLbase against Microsoft's SQL Server.

Rod Zimmermann, Gupta's product marketing manager, said Gupta plans to provide a gateway linking its SQLbase engine and any of its front ends, including SQL Windows, to IBM OS/2 Extended Edition's Database Manager. Those plans are dependent on IBM's release of a multiversion version of Database Manager, which is expected to ship sometime next year.

"What we have here is the potential for a good portable front end," said Richard Finkelstein, a database consultant and principal at Performance Computing, Inc., adding that Gupta may be the first database vendor to get this far. He suggested Gupta may encounter fewer problems working with IBM's baseline SQL standard because its front end was specifically written to run on an SQL engine, unlike Database from Ashton-Tate Corp. and Paradox from Borland International.

There are no plans at present to build a gateway to Microsoft's SQL Server. "We are not working on it, although one of our OEMs is investigating it," Zimmermann said.

Gupta's Sun/Unix efforts will not necessarily lead to support

for Sun's Network File System protocol. "It's not that we are jumping into the Unix business," Zimmermann said, citing Gupta's orientation toward local-area networks. "Networks have improved to the point where you can substitute DOS or Unix on the server."

Gupta will demonstrate a personal computer running out its SQL Window front end accessing its SQLbase server on a Sun server. "We are pretty far along," Zimmermann said, adding that the end product will be compatible with Transmission Control Protocol/Internet Protocol.

**Benchmarks raise hopes**  
Even before their release, Gupta's benchmarks have revived an old complaint: Gupta, along with Oracle, reportedly prohibits licensees and purchasers of its SQL engine from publishing benchmarks of its product.

Gupta's benchmarks both duplicate Microsoft's test and offer a different twist — running tests in standard SQL without extensions.

"Many of these extensions do not work in cooperative processing mode or with some back ends like IBM's DB2," Zimmermann said.

In addition, Gupta's benchmarks take into account users who are doing decision support work and transaction processing, performing queries and updates simultaneously.

### CORRECTION

The report on Xerox Imaging Systems' Gray F/X image processing software (CW, Oct. 2) incorrectly implied that this is the first black-and-white image editor for the IBM Personal Computer. Several packages for that platform are already shipping.

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## Unisys

FROM PAGE 1

director at the New Jersey Sports and Exposition Authority in East Rutherford, N.J.

Although earnings reports from medium-size and smaller companies have been largely upbeat, difficult product transitions and slowed domestic sales continued to wound the giants. Unisys' disappointing figures joined underwhelming third-quarter reports already filed by IBM, Digital Equipment Corp. and Amstar Corp. "My most important criterion in evaluating a vendor is service, and in that area, Unisys hasn't faltered," Conolly said.

Not impacting customer service is a high priority, said Unisys Vice-Chairman Curtis A. Hessler.

"The reorganization has left intact all our major strategic initiatives, particularly research and development," he said. "We've pared redundancies, but we have not restructured R&D away."

At Carnival Cruise Lines in Miami, Fla., MIS director Jim Bussey also appeared unimpressed by the flow of red ink in Blue Bell.

"Ever since the transition began," he said, "we've taken a wait-and-see attitude." Moreover, he added, "We're pretty

committed to Unisys now — we just installed a 2200/622."

Bussey was concerned, however, about personnel cutbacks. "With as many people gone, you can't help but wonder what effect there might be on support," he said.

Unisys said the estimated \$230 million price tag attached to its planned 8,000-person work force reduction ate into the firm's profits.

Other factors contributing to the loss were the reserves forecasted losses and expenses in the company's defense business, inefficiencies inherent in a major product transition and the ongoing effects of unrelenting competition in the computer industry.

Tax deductions that were foregone because of accounting requirements also hurt third-quarter results, according to the company. The temporary loss benefits, which amount to approximately \$225 million, can be carried forward.

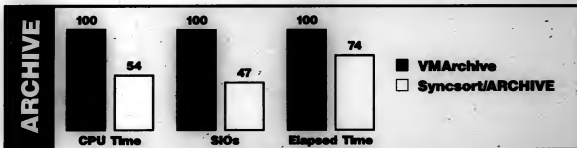
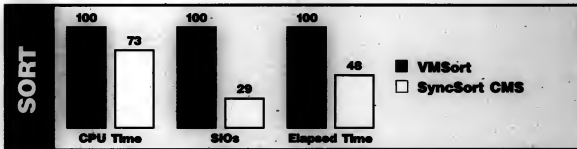
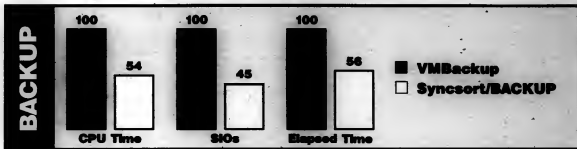
Chief Executive Officer W. Michael Blumenthal put a one-step-back, three-steps-ahead spin on his company's third-quarter showing.

The actions, he said in a statement, "will significantly enhance our competitive posture going forward and our profitability and cash flow in 1990."



Unisys' Blumenthal predicts a rebound ahead

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**WHERE PERFORMANCE IS THE ISSUE.**

## Quake jolts new life into telecommuter idea

BY J. A. SAVAGE  
CHICAGO

SAN FRANCISCO — If disaster were action, 70% of the Bay Area's businesses would have telecommuting in place.

After the major station disruptions caused by the Oct. 17 earthquake, most representatives at an emergency meeting of business employing more than 200 people said they want a telecommuting option.

About 50% said they had some ad hoc telecommuting among their employees, but only a few such as Pacific Bell actually had any formal telecommuting in place before the quake, and then for only 5% of its 20,000 managerial employees.

That was plenty, though, for Robbie Neely, director of corporate communications for Pacific Bell. She and six other managers who live in the East Bay informally got together by telephone after the quake and decided that if each did not have a second phone line into their homes, they would furnish a backup. "The technology got to the point where it worked out. Two years ago, before voice mail, it would have been maybe only 30% effective," Neely said.

Coincidentally, Levi Strauss & Co. was to begin a pilot program next week for 300 employees, according to Meg Franklin, of the firm's personnel services department. The program was set up before the earthquake.

Chevron Corp., with offices in three Bay Area cities, does not have any formal telecommuting set up, but "is looking into it," said Fred Shetz, administrator for the company's nationwide vanguard program. "Most professional people I know have their own system at home. At first we used home PCs to keep in touch,

especially on Wednesday" — the day after the quake.

Employees have not had to buy their own personal computers at Hewlett-Packard Co., although there is no formal telecommuting policy. Employees who have justified working at home to their supervisors can get a "lone" computer from the company, according to Dave Sanders, general manager of HP's Roselife Information Systems Division. The lone system, however, is set up primarily for work at home in addition to regular work hours.

But, as evidenced at the meeting last week on flexible work options, even in a post-quake transportation crisis, middle managers may have to work steadily to make the change.

"Most of management looks at input rather than [employee] output. If people are at their desks looking busy, then [managers] are happy," said Alice Cochran, an associate with New Ways To Work, a San Francisco nonprofit group promoting flexible work schedules and telecommuting. Cochran's group sponsored the meeting with prominent businesses and governmental agencies, including the city. "When you look at the hard numbers of cost/benefit analysis, it is hard to prove productivity increases," said Marcia Strahley, manager of policy and issues for Pacific Bell's corporate communications.

Accounting firm Ernst & Young, on the other hand, has a telecommuting option primarily used by women faced with child-care difficulties and may broaden its use while transportation systems get rebuilt. About 5% of Pacific Bell's managers telecommute on a part-time basis, said Steven Coulter, area vice-president and a telecommuter.

JEAN S. BOZMAN

## Fault-y tales: Mainframes rock 'n roll

BY JEAN S. BOZMAN  
CHICAGO

It was a day when mainframes learned how to walk. San Francisco-area computer users said last week. The Oct. 17 earthquake caused mainframes and minicomputers to roll around their computer rooms and PCs to fly off their desktops.

Systems vendors and disaster recovery firms reported that most of their customers were back to full operations last week. But in the immediate aftermath, remaining operations was a momentous task.

"Computers had moved as far as their cabling would allow them to. There was flooding all over the printer area, and our modern rack was tipped over at a 45-degree angle," said Roger Johnson, who manages information systems at Watsonville Hospital, within several miles of the earthquake's epicenter.

### More than 150 hurt

The hospital was evacuated for safety reasons and more than 150 people were treated for earthquake-related injuries on the lawn. In the first few hours, Johnson was unable to re-enter his computer room, which houses a Digital Equipment Corp. VAX \$250 and four large DEC disk drives.

"By the time I could get back in our computer room, it looked like a bomb had gone off," he said last week.

Six hours after the quake, Johnson started to reassemble his system himself, but was frustrated by an uninterruptible power supply (UPS) system too damaged to support the VAX.

The following morning, DEC field technicians restarted the VAX and a technician for the UPS company fixed the faulty

power supply. Overnight, however, the VAX took several power "hits" as the city electricity came on and voltage fluctuated.

"We had sliding computers," said Jane Paradise, manager of worldwide asset protection at Apple Computer, Inc. in Cupertino, Calif. "They rolled several feet, but never came unplugged. We switched to auxiliary generators, which we used for about 13 hours."

At Matson Navigation Co., an ocean freight firm that ships goods from West Coast ports to Hawaii, a lack of UPS systems and a day-long power outage in San Francisco's financial district put business on hold until early Thursday morning.

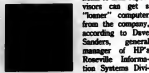
"The equipment slid around, and some of the wheels fell into the cut-outs in our raised floor," said Jerome Hyman, assistant director of computer services. Matson's computer room is on the fifth floor of a downtown office building.

All that sliding around caused several pieces of equipment to turn over, including an IBM System/38 disk drive and several IBM-compatible tape drives. Using an iron bar, IBM customer engineers righted the equipment before the power came on, said Joe Desobrie, director of IBM's National Service Division for the Northwestern region.

Luck passed them by. Other IBM customers weren't so lucky. A number of them — IBM wouldn't say exactly how many — resorted to running

their applications on mainframes that IBM offered for use at IBM facilities around the country.

Disaster recovery firms filled their backup centers with temporarily displaced computers but expressed surprise at how quickly most were able to move back



Crushed car illustrates recovery challenges

into their facilities.

"The earthquake had the potential to cause more severe disruptions," said John Jackson, executive vice-president of Comdisco Disaster Recovery Services, Inc. "By the time they got to our recovery centers, many had stabilized the power situation at their own data centers."

All four companies that moved into Sungard Data Systems, Inc.'s hot sites had returned to their home data centers by Monday.

"By Thursday, most of them had their power back and got access to their data centers," said Sungard spokeswoman Sue Hietzel. "But then there was a 5.0 aftershock, and they decided to stay in our hot sites over the weekend."

But the quake's damage, it seems, was quickly repaired. "Very few large systems were down in, because most of our customers encountered very little damage," said DEC spokesman Nick Hoopes.

## Borland dusts off, keeps on moving

BY CHARLES VON SIMSON  
CHICAGO

SCOTT'S VALLEY, Calif. — Philippe Kahn's office is a shambles. Air blown work to dry rugs stained from water damage caused by broken pipes; stray tennis ball cans litter the floor. The building, one of three at Borland International's headquarters here, had to be evacuated after the Oct. 17 quake. The only thing left undamaged is the golf driving cage out on the deck surrounding Kahn's office.

The rest of the company, however, is largely back on its feet. In the two buildings that were left unharmed, while Borland was one of the Silicon Valley companies hardest hit by the quake, employees have bounced back quickly. "We were really

close to the epicenter, but we're rebuilding faster than we got rocked," said Kahn, who was on a trip in Australia that was interrupted by the disaster. "It is back to business as usual."

When the quake hit the Bay Area, things were moving at Borland. The company was set to announce second-quarter profits of \$2.6 million, up from a \$6.3 million loss for the corresponding quarter a year ago. The news came just as database rival Ashton-Tate Corp. unveiled its expected dismal results.

Borland's Quattro Pro spreadsheet, which may begin to ship in volume this week, had opened to rave reviews. And

Borland's, the national business weekly, ran a feature article portraying Kahn as a high-tech cross between Andrew Carnegie and Aristotle.

"There is no question that prior to the quake, Borland was on a roll," said Nancy McSharry, an analyst at International Data Corp. in Framingham, Mass.

"Given that the damage overall seems to be light, they shouldn't be slowed for long."

Although the company is less than three miles from the suspected epicenter of the quake, and one building had to be vacated, there was ample space in another adjacent building for the displaced administrative staff.

## Ready to rebuild

The rumbling from the great California earthquake, now up-graded to a 7.1 tremor on the Richter scale, is dying down.

Continuing seismic activity beneath the Santa Cruz Mountains has generated 4,500 aftershocks as of last Thursday. Even so, the task of demolishing weakened structures in an area bounded by San Francisco and Oakland to the north and by Santa Cruz, 60 miles south, had begun.

Repair work began as a massive barge pulled beside the crippled Oakland Bay Bridge, which may be closed until Thanksgiving. Workmen were trying to repair the damaged upper roadway and the lower roadway on which it loaded. Engineers decided, however, that they could not be salvaged; the sections will have to be fabricated. Road closures may not return to normal for three months, state officials said.

JEAN S. BOZMAN

# IBM's CIM platform moves SAA onto the factory floor

BY ELISABETH HORWITT  
CI STAFF

WHITE PLAINS, N.Y. — IBM unveiled a computer-integrated manufacturing (CIM) platform last week that grafts its Systems Application Architecture (SAA) to the factory floor and is also said to allow users to tack on whatever non-IBM systems they happen to have already installed.

A large portion of IBM's 50-plus announcement deluge consisted of statements of direction that IBM hoped would provide users with a general sense of how its CIM strategy will evolve over the next year or two, vendor spokesmen said. The solid part of the introduction consisted of some product introductions, such as Manufacturing Automation Protocol 3.0 support, that extend existing SAA services into the manufacturing environment.

SAA is said to provide a consistent set of communications, database and user presentation services over IBM's mainstream systems as well as consistent commands for applications to access those services.

IBM is "well aware that people don't want to throw away their existing systems," said Robert Williams, IBM vice-president and general manager of CIM Systems. Thus, the vendor also announced tools for integrating other vendors' products with its CIM platform. However, users who expressed interest in IBM's CIM strategy raised questions as to how far the vendor was stretching its hand to competitors' products.

Eastman Kodak's development division, for example, is seriously considering IBM's CIM architecture as it works toward a global manufacturing system, said David Peet, manufacturing systems coordinator for the division.

Still some DEC. However, while Kodak's information systems department is an IBM shop — and has, in fact, farmed out much of its operations to the vendor — its manufacturing facilities retain a number of Digital Equipment Corp. VAXs, "which we're not prepared to displace with," Peet said.

Further complicating matters, he said, some operations are "pushing for decentralization" and are using a materials resource planning system that runs on Novell, Inc.'s Netware and PC-DOS. "So how do you fit that into IBM's CIM architecture?" Peet queried.

IBM announced three major methods for applications to tie into its CIM platform. One is through MAP 3.0, which will be running on most IBM systems by March 1991. A second method is through a data import/export facility, which is said to allow non-IBM systems to access data resources via IBM's CIM repository, Communications and Data Facility 1.

How much code is involved makes a big

difference to Westinghouse Electric Corp.'s energy and utilities systems group, according to Richard Miller, director of IS, who said that since most of the group's product lines are autonomous, it is more interested in "bridging our islands of automation" than in total integration.

The Westinghouse group might be interested in setting up a CIM repository to integrate different manufacturing areas at each of its plants but is concerned that this does not involve "writing too much

code at both ends" to tie in existing systems, Miller said.

A better way for systems to access SAA services, including the repository, is via "enablers," or software tools that IBM is in the process of developing with a number of partners.

Such tools are said to ease the effort of tying manufacturing applications to common functions such as data access, communications and user presentation, IBM claimed. The drawback is that these offerings will work only for SAA systems, plus a limited number of non-IBM systems that are deemed strategic. "We can't tie to everything," an IBM spokesman said.

For example, IBM Product Manager: Engineering Management Edition, announced this week, is said to allow pro-

duction management applications based on MVS — and eventually on VM and OS/2 — to interact with engineering and computer-aided design systems via the CIM repository, to coordinate the design-to-production process and control engineering changes.

Conceding that Unix is a strong element in the manufacturing environment, IBM also announced intentions to implement CIM services on its AIX systems "over time." This would presumably include SAA-related services, even though AIX is not an SAA element.

The CIM platform market that IBM has targeted will grow 20% per year for the next few years, according to Advanced Manufacturing Research, Inc., a Cambridge, Mass.-based research firm.



Kodak's Peet will hold on to his VAXs



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## NEWS SHORTS

## NAS in a name change

Mainframe vendor National Advanced Systems last week made its name change official, adopting the moniker Hitachi Data Systems Corp. The name switch came about in the wake of Hitachi Ltd. and Electronic Data Systems Corp.'s acquisition of NAS from National Semiconductor Corp. earlier this year.

## CA earnings dive

Software vendor Computer Associates International, Inc. last week reported net income down 66% to \$9.6 million in its second quarter ended Sept. 30. Revenue increased 5% to \$282 million. CA attributed its plummeted profits largely to the acquisition of Colinet Software, Inc. — a \$333 million deal that mounted in expense as delays in closing from customers' purchase decisions.

## House closes copyright loophole

The U.S. House of Representatives recently passed a bill clarifying that software companies may use state agencies for violating software copyrights (CW, March 27). However, the loophole-closing legislation (H.R. 3045) still must be considered and approved by the Senate before becoming law. Adapto and the Software Publishers Association sponsored the legislation. "Only by making it possible for software developers to litigate against state institutions will the industry be able to protect its intellectual assets and curb software piracy," said Adapto Executive Director Lomme Jans.

## PG&amp;E exec tapped for GSA job

Thomas J. Buchholz, a senior IS professional at Pacific Gas and Electric Co. in San Francisco, was appointed commissioner of the U.S. General Services Administration's Information Resources Management Service last week. The office is responsible for governmentwide IS and telecommunications services and acquisition policy.

## Software firms stalk French pirates

The Business Software Association, based in Washington, D.C., said it will commence legal proceedings against two major French corporations for alleged software piracy. The targeted firms are Telediffusion de France, a telecommunications company, and Banque Paribas, a major financial institution.

## Cray, CDC record first joint sale

The joint marketing agreement between Control Data Corp. and Cray Research, Inc. has produced its first sale with the United Kingdom Meteorological Office's purchase of a Cray Y-MP supercomputer. The Y-MP will be used for day-to-day weather prediction and climate research. Former supercomputer rivals Cray and CDC ended the marketing agreement in May, one month after Control Data folded its own supercomputer operation, ETA Systems, Inc.

## VSATs to aid quake watch

Two weeks after the San Francisco earthquake, the U.S. Geological Survey has awarded a \$5.5 million contract for a satellite communications network for its U.S. National Seismic Network (USNSN). Scientific-Atlanta, Inc. will connect a hub earth station at the National Earthquake Information Center (NEIC) in Golden, Colo., with up to 250 of its 1.8m VSATs in monitoring stations throughout the U.S. USNSN officials hope the VSATs, which bypass vulnerable terrestrial phone networks, will ensure speedy delivery of seismic data to NEIC.

## Feds issue advanced video pact

The David Sarnoff Research Center, Sun Microsystems, Inc. and Texas Instruments, Inc. last week were named by the Defense Advanced Research Projects Agency to develop a high-definition video workstation. The workstation will be designed to display multiple video, image, computer graphics and text windows on a single high-definition screen.

## Users uneasy about Prime cuts

BY NELL MARGOLIS  
CW STAFF

NATICK, Mass. — Prime Computer, Inc. raised the curtain on the first stage of its new business plan last week. However, the division of the company into four profit centers and a 2,500-person work force cut unsettled some users.

The approximately 20% reduction of Prime's work force will make the troubled company "leaner and meaner," some analysts and users said. Well, said John True, IS director at California State University's (CSU) San Francisco campus, "it will certainly make them leaner."

"This is very distressing to us," said Doug Hart, MIS director at ACI America, Inc. in Placentia, Calif. "It causes more uncertainty than ever about what's really been going on at Prime in the past and what's going to happen there in the future."

An estimated 40% of ACT's approximately \$300 million annual business is run on Prime computers, Hart said, "which gives us a big stake in a stable commitment. Prime has made to [research and development]. I'm wondering how these massive layoffs will affect those commitments." Prime declined to speci-

fy how the cuts will be apportioned.

An analyst who requested anonymity had similar questions. "Any company might make a 10% cut for efficiency," he said, "but 20% really raises serious questions about the ongoing viability of research and development, if not the company."

## No surprises

The business plan rolled out last week, layoffs included, was in line with expectations created in August by newly appointed Chief Executive Officer James MacDonald and Chairman Russell Plantner when New York-based venture capital firm J. H. Whitney & Co. acquired Prime, a firm battered by its nine-month battle to stave off a hostile takeover by MAI Basic Pro, Inc.

In its incarnation as a privately held company, Prime will be divided into four discrete business units: computer-aided design and manufacturing (Computer-tation), minicomputers, customer support and international operations.

Each "profit center" will have its own bottom line and will operate under a clear mandate. According to a prepared statement issued last week, Prime "will seek to commit its re-

sources to businesses that generate acceptable return on investment."

MacDonald emphasized that the cuts, while personally painful, put Prime into necessary financial trim. Plantner touted the plan as one calculated to let Prime "repay its bank debt over the next four to five years" and focus more closely on customer needs.

Customers, however, were far from confident that it will. While several analysts said they were willing to give Prime's strategy the benefit of the doubt, Hart voiced doubts.

"Their current actions tell me that they're packaging these units for sale," he said.

CSU is contemplating a move to Digital Equipment Corp. and IBM.

"It's sad," True said. "They've got good products, good prices, good service. We just don't believe the operating system will be there for us."

A Prime spokeswoman last week confirmed that the company had terminated two development agreements with Intel Corp. One was to have yielded a very fast emitter-coupled logic version of the Intel Corp. 1486 chip; the second would have pursued a new flavor of Unix.

## Execs rethink business at Hammer Forum '89

BY CLINTON WILDER  
CW STAFF

BOSTON — The massive, radical corporate changes enabled by information technology are difficult, time-consuming, expensive — and necessary.

That was the theme that brought 450 information systems and business executives to Hammer Forum '89, sponsored by consultant Michael Hammer, last week. Under the rubric of "re-engineering the corporation," Hammer used his humor-spiced, energetic style to inspire executives to rethink their basic business processes. Representatives of 11 U.S., Canadian and British companies spoke of significant changes that they have achieved in those business processes and the major obstacles they encountered along the way.

The chief roadblock to change is the entrenched way of doing business, preserved by layers of middle managers pro-

tecting their turf and further cemented by systems and applications that have only automated what was already in place. "The true value of IS is not automating what is, but creating what is not," Hammer said.

Against these immovable objects, the force for change must be an all-out, cross-functional effort, or it will fail, he said.

"It's a case of David against Goliath, except the big guy has the sling," said Charles McCaig, senior vice president of corporate services at Mutual Benefit Life Insurance Co. in Newark, N.J. "We underestimate how hard it is to get people to change the way they're doing things."

Mutual Benefit Life drastically streamlined its new policy applications process, which formerly involved an average of 30 steps and 19 different employees across five departments for every new policy. The firm also made significant changes to its

hierarchical management structure, including the removal of many job titles. A local-area network-based front end to the mainframe databases was the technology enabler, but the key to success was sponsorship of the project by senior management.

"If you don't have senior-level support, you'll be pulled back by the organization," McCaig said.

That was a theme sounded again and again. In several cases, the catalyst for change was a new executive hired from outside the company or industry who was not wedded to the firm's traditional business processes.

At Hewlett-Packard Co. a six-year, \$6 million overhaul of the firm's purchasing function was spurred by a new materials management executive who "was agast at our purchasing process," said Lloyd Taylor, HP's director of corporate IS.

Taylor said the new procurement system has done much more than cut inventory costs. It has increased on-time deliveries by 140%, cut lead time by 46% and reduced defective products by 75%. However, Taylor said HP had no plans to market the new applications it developed. "Someone buying the system would be disappointed if they didn't also change the underlying process," he said.



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# Unix Expo to hail arrival of Unix V.4

BY AMY CORTESE  
CW STAFF

NEW YORK — Unix System V, Release 4, the long-awaited result of an AT&T and Sun Microsystems, Inc. effort to merge elements of the most widely used variants of Unix, is expected to highlight the Unix Expo conference this week.

In contrast with the expected near-term availability of Release 4, progress on the Open Software Foundation's (OSF) Unix offering, OSF/1, has been stalled recently, as the group charts a more ambitious course [CW, Sept. 25].

While Release 4 will get to market first, OSF/1 will have functionality that Release 4 will not have, such as multiprocessing, according to an OSF spokeswoman.

OSF had notified members several weeks ago that it was considering swapping technology from Carnegie Mellon University's Mach Unix kernel to add features such as multiprocessing and enhanced security to OSF/1. The change is likely to throw off the delivery from the original mid-1990 time frame. OSF is finalizing recommendations for OSF/1 that it will present to members at a meeting

next week, the spokeswoman said.

Differences among Unix systems fuel debate, but as standards emerge, the differences may not matter as much. One set of standards is specified by X/Open Ltd., a group comprising a cross section of Unix vendors that bills itself as a neutral, unifying force in the industry.

X/Open is expected to bolster this image Wednesday with product support for its Unix standards by heavyweights on both sides of the fence — Unix International and OSF.

AT&T and Digital Equipment Corp. are expected to announce that their re-

spective Unix operating systems, Release 4 and Ultrix, are compliant with X/Open's most recent Portability Guide. Siemens AG, which, like DEC, is a member of OSF, will also announce an X/Open-compliant product. The Portability Guide details specifications for X/Open's Common Application Environment. The CAE provides a high-level layer of standards above the operating system that X/Open says will ensure portability among compliant products.

However, an X/Open, OSF and Unix International pursue their standards agendas at a bureaucratic crawl, vendors are pushing ahead on their own courses. DEC is expected to announce a new version of Ultrix with symmetrical multiprocessing capabilities, racing past both OSF and AT&T's efforts to provide that capability.



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COMPUTERWORLD

## SNA arena rivals vie head-to-head

BY ELISABETH HORWITT  
CW STAFF

NCR Conton and IBM, rivals in the Systems Network Architecture communications processor arena, bumped heads last week, concurrently announcing connections between SNA and Transmission Control Protocol/Internet Protocol (TCP/IP) networking environments.

Such products are of particular interest to Department of Defense installations, according to John Abercrombie, director of computer communications for the U.S. Air Force at the Tinker Air Force Base in Oklahoma. Many are looking for ways to link their IBM hosts with Defense Data Network systems that use TCP/IP, Ethernet and X.25 packet-switching protocols, he said.

Both IBM and NCR Conton's products go beyond TCP/IP to host communications, but in different directions.

Conton's 56X5 front-end processor line, equipped with new adapters and software, is said to connect Ethernet TCP/IP local-area networks not only to IBM hosts but also to other LANs, either locally or over a circuit- or packet-switched long-distance connection, according to Conton Vice-President of Development Ronald Groenke. An existing Token-Ring adapter allows the 56X5 to act as a gateway between Token-Ring and Ethernet LANs as well, he added.

Conton also announced TCP/IP applications software that allows IBM hosts to communicate with systems using TCP/IP Simple Mail Transfer Protocol (SMTP) or File Transfer Protocol. A translation facility lets SMTP users exchange messages with IBM host users via IBM's Distributed Office Support System.

IBM's 3172 Interconnect Controller is said to provide IBM host channel connections for IEEE 802.3 Ethernet, IEEE 802.5 Token-Ring, Manufacturing Automation Protocol (MAP) 3.0, 10M bit/sec, 802.4 Token-Bus or MAP 3.0 carrier band SM bit/sec. protocols. Based on Miro Channel/80386, the controller is said to connect up to four LANs and support two host channel connections.

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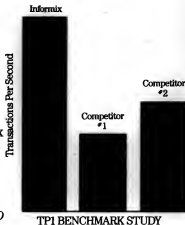
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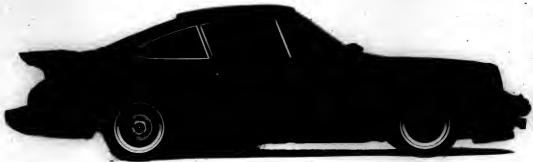
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## Bell Atlantic to acquire CDC third-party maintenance unit

BY NELL MARGOLIS  
OF BUREAU

PHILADELPHIA — Bell Atlantic Corp. said last week it will acquire Control Data Corp.'s third-party computer maintenance business, creating an independent third-party maintenance provider more than twice the size of the No. 2 entry.

Specific terms of the deal, which contemplates folding the CDC division into Sorbus, the leading maintenance subdi-

visory of Bell Atlantic Customer Service division, were not disclosed.

Sorbus, which services about 60,000 customer sites, shows estimated 1989 revenue of \$175 million, according to Business Development International, a computer industry consultancy in Franklin Lakes, N.J. The CDC division, according to Business Development figures, clocks in at an approximate 6,000 customers and \$100 million in 1989 revenue.

The combined company "will be No. 1

among the independents, and by a long stretch," said D.R. "Mike" MacNaughton, president of Business Development. The strength potential in the merger, he added, is not merely a matter of size. "They have a pretty good product fit," he said, "and no apparent cultural clash."

### Growth in key areas

Sorbus Chairman and Bell Atlantic Customer Services President Thomas Vasilakos said the acquisition will extend Sorbus' breadth and depth in key areas including workstations, distributed systems and cooperative processing.

Perhaps even more important, MacNaughton said, is CDC's position "as leading third-party maintenance provider to

DEC users." Under the proposed deal, Sorbus will buy CDC's customer base and maintenance facilities for all computer platforms — prominently including Digital Equipment Corp. and IBM — other than CDC's own Cyber line, which it will continue to maintain.

Welding Sorbus' premier third-party IBM maintenance status to CDC's parallel position in the DEC world, MacNaughton said, could give the third-party maintenance market a shot in the marketing arm. "The whole [independent maintenance] industry has been suffering from profit problems, mostly brought on by IBM's extreme price aggressiveness," he noted. With third-party providers able to attract customers only by picking prices some 10% to 15% lower than those offered by computer vendors, he said, deep discounting and price cuts by vendors can drive independents below the profit line.

Intense price-cutting by IBM was cited as the major impetus behind Sorbus' layoff of 100 workers one year ago, the first layoff in the company's history. DEC, while not yet notorious for price cuts, is bringing similar pressure to bear on the third-party providers through sheer marketing aggressiveness in the maintenance arena, MacNaughton said.

## Oracle tools stress interface portability

BY RICHARD PASTORE  
OF BUREAU

Applications developers and end users who prefer to work with particular interfaces now have recourse to two Oracle Corp. tools announced today that feature interface portability.

According to Oracle, applications designed with these tools for its relational database management system automatically support all standard user interfaces, including IBM's Presentation Manager, Digital Equipment Corp.'s Decwindows, Apple Computer, Inc.'s Macintosh interface and the Open Software Foundation's Motif.

Applications built with SQL Forms Version 3.0 and SQL Menu Version 5.0 adopt the character mode, block mode and full-screen user interface of the target platform.

This adaptability allows developers to concentrate on application content rather than on recording applications to support different hardware environments and interfaces, the company said.

The interface independence of the application libraries and users as well. "Organizations [can] select hardware based on price/performance criteria rather than software compatibility alone," said Sohalb Ahmed, vice-president of Oracle's Tools and Graphics Group.

Now in beta testing, the tools are slated to ship in 60 days with support for the DEC VAX/VMS character-mode interface. Support for the other interface mode is expected to ship in the second quarter of 1990.

SQL Forms and SQL Menu require Oracle Version 6.0 and are priced from \$1,500 to \$70,000, depending on platform and system configuration.



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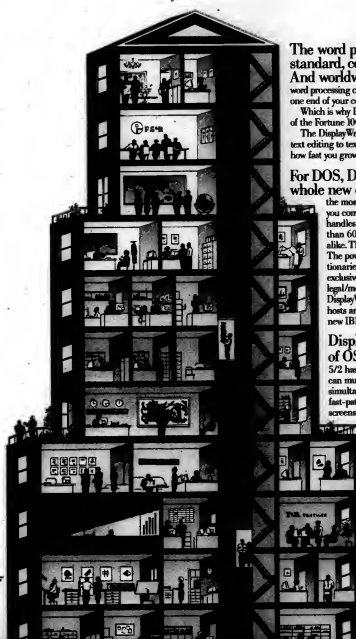
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# Unisys states CASE for 4GL lineup

BY ROBERT MORAN  
CITYTOP

NEW YORK — Unisys Corp. took steps last week to carve out a role in the developing market for computer-aided software engineering tools.

The company announced a series of enhancements to its fourth-generation languages — Linc and Mapper — and said it has begun porting tools to Unix processors outside of its proprietary base. The company has also developed an interface to third-party design and analysis tools.

Despite the merits of Linc II and Mapper as computer-aided software engineering (CASE) tools, analysts said the company's battles will be fought on a marketing front rather than a technological one.

"Unisys has the potential with their set of tools to play an important role in systems development," said George Hathaway, vice-president of the Index Group, Inc., a consultancy in Cambridge, Mass. "But their platforms limit their potential."

Unisys said it accepted orders to bring Mapper to such platforms as AT&T, NCR Corp. and the IBM RT workstation and added that it is doing the same for Linc II.

## Marketing front

On the marketing front, analysts pointed to Unisys' use of a process-driven methodology rather than the stronghold of data-driven CASE methodologies in the IBM world of information systems.

Unisys said it will provide an open interface to allow third-party analysis and design tools to integrate with the Linc repository. The interface is slated to be out in the first quarter of 1990.

"The interface acknowledges existing investments in front-end tools and gives Unisys users some CASE-like functionality, which they generally lacked," said Bill Martorelli, vice-president of New Science, a consultancy in Southport, Conn.

Further, Unisys announced Linc Design Assistant (LDA), a \$4,500 graphical front end to Linc, based on MS-DOS and an object-oriented language. When LDA becomes available in December, users will be able to construct and manipulate a diagrammatic representation of the design and view the interrelation between the components, the company said.

Companies with current Linc systems will be able to use the tool for reverse-engineering and to view or document their object-model representations.

According to Phil Pyburn, president of Pyburn Systems in Boston, Linc previously provided screens and reports about the

system but did not offer abstract representations of the system at the very high end.

"With the front end, developers can describe the system at a higher level of abstraction," he said, which helps us describe the system in a way that is meaningful to the user," he said.

However, Pyburn said Linc was a perfectly fine development tool before the debut of LDA. "I have a feeling that a lot of this CASE front-end stuff is more fluff than substance," he said.

Unisys also announced the Linc Systems Approach (LSA), a software tool that guides devel-

opers through each stage of building a Linc system and helps designers perceive business activities in their entirety rather than as separate data, process, function or flow control processes, the company said. Available immediately, the product costs between \$1,500 and \$1,800, depending on processor size.

The company also announced Mapper C Release 4R1, with in-

terfaces to IBM's DB2 and Oracle Corp. databases as well as new graphics and on-line documentation. The company said the release will ship in the middle of December.

Depending on processor size, the runtime version costs from \$2,000 to \$18,000. The development version ranges from \$6,000 to \$60,000, depending on the size of the processor.



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Got it?!

## EDITORIAL

## Quaker notes

**G**ENERALLY, THIS SPACE is used for sundry spleen-ventings from senior editorial management on subjects ranging from government bureaucrats to irresponsible vendors to idle IS management.

And this week, we'll target these groups again. Only this time, the effort will be in finding the proper words to praise them for the truly phenomenal effort put forth in minimizing the systems damage from one of nature's most violent convulsions, the Bay Area earthquake.

Never before in any other part of the world has an area so rich in users and vendors of IS technology been struck by such a calamity. That there was so little lasting systems damage, especially to such vital concerns as hospitals and utilities, is a tribute to preparedness beforehand and cooperation afterwards.

So for meritorious valor above and beyond the call of duty, the *Computerworld* editorial Legion of Honor medals go to (in no particular order):

**The communications carriers.** Pacific Bell, the local carrier, sustained very minor damage to corporate headquarters. Why? Because it recently spent several million dollars earthquake-proofing its facilities.

The major long-haul carriers, AT&T and MCI, processed 2½ times the normal traffic in the hours immediately following the quake. Emergency signal-blocking procedures ensured that intra-LATA traffic was handled with maximum efficiency.

As the saying goes, the network is the system; thanks to these guys, the system took a lickin' but kept on tickin'.

**The IS 'boy scouts.'** Their motto: Be prepared. And prepared they were. From Wells Fargo to Clorox to the University of California to Bank of America, steps taken by IS managers anticipating disaster paid off handsomely. Better than eight of 10 ATMs continued to spit out emergency funds. Automated production lines were humming within 48 hours, less in some cases. Remarkably, even vibration-sensitive disk farms suffered little as IS slowly brought systems down in accordance with predetermined disaster plans.

**The disaster recovery outfits.** The Comdiscos, Sungards and other vendors in the "black-and-blue" trade definitely earned their pay, largely because of power outages. Organizations in need were prioritized and then served accordingly. One estimate held that less than 20% of IBM mainframe sites are covered by disaster recovery services, a number that is clearly higher in the Bay Area.

In essence, the preparedness for a truly unpredictable disaster paid off royally for Bay Area users, just as the general preparedness in the area greatly minimized the loss of life from such a tremendous shock. Just think: Seismologists maintain that this same event could occur in perhaps half of all U.S. cities.



## LETTERS TO THE EDITOR

## A better image

Regarding "Insurers wary of image risk" (CW, Sept. 25), I was interviewed almost four months before the article and quoted out of context. A better headline, based on your experience and the comments of your visitors, would have been "Insurers excited about image."

An image system can be used in two ways — to process and to store the mail after it has been processed. Quoting only the numbers for processing work gave the impression we had hardly begun, rather than being almost done. By only listing one type of benefit, rather than the three I described, the project seemed to only break even, rather than being a big winner.

The information was also out of date. In early June we were expanding from 63% to 77% of the mail stored and reached 100% on July 10. We were only processing 16% of the mail, as reported, but by mid-September were handling 50% and are at 65% today. We may have had only 300 terminals installed in June; by mid-September 1,022 terminals were in use, and the number is still rising.

The primary advantages of image are in a large installation (if only a few people share the files, it is still cheaper to have all of them sit next to a filing cabinet). A large installation of a new technology takes time and care.

The hundreds of people I have talked with are proceeding as carefully as anyone would with a multimillion-dollar investment. At the same time, they remain as enthusiastic as our users.

**Charles A. Plesums**  
Director of Image Systems

**San Antonio**

## New CA look

I have never been a fan of Computer Associates International, Inc., although we do operate two of their financial packages. My lack of enthusiasm for the company is partly due to prior experience concerning their manner of customer relations and product reliability. It was with no small amount of anticipation, therefore, that I attended the recent Cullinet User Week in Atlanta, which was the subject of "Cullinet conference soothes users' fears" [CW, Oct. 2].

Following the Executive Management Meeting, however, I was left with a much more

## This week in history

Oct. 29, 1979

The same problems that forced IBM to substitute 16K-bit memory chips from other manufacturers for the more sophisticated 64K-bit chips in 4341 memories may also stall the H series of superprocessors.

Oct. 29, 1964

Recent scientific reports suggest that very-low-frequency radiation emissions from VDTs could be biologically harmful.

Since protective laws for VDT operators have yet to pass in any state, U.S. and Canadian clerical workers turn to unions to address health and safety concerns such as the effect of computer use on general health, stress levels, vision and pregnancy.

positive view of CA than I would have anticipated. CA Chairman Charles Wang's remarks to the audience were aggressive, promising and forthright. When confronted with a question for which he and the executive staff had no answer, he admitted it and promised one.

While my April 1989 purchase of the IBM Mainframe Generator is finally to be released in the near future (Nov. 1, 1989 is now the release date) as a production version, I have to admire the strategic business decision made by CA to finish/extend development on all existing software prior to allocating resources to the development of new software. After all, if you do not know where you are, how can you know where you are going? I remain cautiously optimistic that customer support is finally coming of age as a corporate priority at CA.

In one-on-one discussions with Wang I voiced my own concerns as to CA's future support for Cullinet users. I echoed his opinion that "talk is cheap" and his follow-through would be what mattered.

So, Wang, please be advised that the meter is running and the eyes of an anxious CA (formerly Cullinet) user community are upon you.

**James T. Werther**  
Vice-President  
Information Systems  
Bombardier Capital, Inc.  
Burlington, Vt.

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laheris, Editor, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701.

# Can DEC keep morale high?

GLENN RIFKIN



September 1987. Digital Equipment Corp. is robust. The stock hits \$198 per share as the company

prepares for its mammoth Decworld exhibition. The Maynard, Mass. minimaker is hiring thousands of new employees to keep up with seemingly insatiable demand for its machines.

October 1989. The rocket has landed with a loud thump. The entire computer industry is slumping badly, and DEC is feeling the pain acutely. Its stock drops to \$86, a 52-week low. U.S. sales are off, and net income dropped for the fifth straight quarter for the Maynard giant. A salary freeze for all U.S. employees continues for the fourth straight month, and the first iteration of an employee attrition program begins in Salem, N.H. Although employees believe they are better off than their counterparts at Wang or Data General, a widespread malaise has set in at DEC.

The company's electronic mail network is constantly abused with angry and questioning com-

Rifkin is a Computerworld features editor.

ments from employees. Rumors of layoffs fly as employees continually wonder what Ken Olsen has in mind for the thousands of idle hands within the company. Reassessment spreads among U.S. employees who are starting to question the fairness and necessity of the continued U.S.-only salary freeze.

In the midst of all this, Jack Shields, one of DEC's most powerful senior executives, resigns in the wake of published reports that he has angered Olsen with his handling (or mishandling) of DEC's sales organization.

Not surprisingly, morale at DEC is down. "Morale is low everywhere, not just in headquarters," one high-level engineering manager says. "People are saying 'everybody is sitting around doing nothing' and are asking 'Why aren't the managers doing anything about this?'" And someone else says, "Because the managers don't have anything to do either."

"It feels different than the time downed in 1983," says another longtime manager. "Financially, we are more healthy

now. But people aren't leaving up to defend the company so quickly."

There's a feeling that the company isn't giving back what it should compared with what the employees are giving.



SEVEN FIVE

There's a lethargy; people waiting for the company to make a move.

The feeling at DEC is that there is greater nervousness throughout the company now than during similar downturns in

the past. "People are scared that this time, there really might be layoffs," one employee says.

Managers within the company, as well as outside observers, agree that DEC has at least 10,000 more employees than it currently needs. Despite that, there is unlikely to be a formal layoff. A lucrative employee buyout program, which was of-

The word at DEC is that last week's Aquarius announcement

DEC's high-end VAX 9000 minicomputer is a "make or break" product to pull DEC out of its malaise. "There's a certain amount of truth to that," says Terry Shannon, a DEC-watcher at International Data Corp. "Others see it as a harbinger of the future of this system's growth. It takes them into a new marketplace where there is formidable competition, but if they want their on-line transaction processor story to be a bestseller, they need an engine to run the system."

Whether or not Aquarius fulfills its promise, the short-term picture remains unclear for thousands of employees. The historical "family" feeling that is part of DEC's culture makes many feel that it is better to "spread the pain," as one finance manager puts it, rather than see selected people dismissed.

But the freeze on salaries, promotions and stock options, along with

an un-DEC-like straitjacket on budgets for development projects, has caused widespread frustration. "There's no reason for the salary freeze," one employee says. "The company has

Continued on page 23

## 1989 recession: Stop the stuff and nonsense

MARTY GRUHN



Let's face it, the computer industry is going into a recession — and in a big way. Each

more vendors announce flat or falling sales, with the now requisite round of layoffs and early retirement programs. From the evidence, the computer industry seems to be under siege. The question is, of course, why?

History can be a most effective teacher in the computer industry, and this case is no exception. The last computer recession started in 1985 and lasted roughly through 1986. What is common with that recession and the one we see today? Both were triggered by a glut of computing power in organizations. And they were preceded by two years of stuff and nonsense from industry suppliers.

Gruhn is a consultant specializing in computer industry trends and strategies and founder of the Sierra Group.

By 1985, industry suppliers were coming out of a period where the battle cry was the power of the personal computer and the convergence of voice and data systems. AT&T was still trying to establish credibility in the computer business and was

who was happily recomputing his spreadsheets — and trying to figure out why the vendors had lost their minds.

No product better represents this era of insanity than the now defunct executive workstation, a smart terminal with an integral telephone. While positioned as a tool for executives to keep in touch with their busy organizations, its only real claim to fame was the ability to access stock quotes on a real-time basis and act like a second-rate PC.

**T**HE PC EXPLOSION that fueled the computer industry in the 1980s is on the wane. That is why demand is down — and why vendors are going into a tailspin.

touting voice and data integration as the key to computing in the future.

IBM was giving AT&T a headache through its acquisition of Rolm and had begun planning the suggestion that the telephone system should be managed by IS. While the industry giants agreed, other vendors stampeded into these supposed markets through alliances which produced innovative, but largely useless, technologies. In the midst of the melee sat the user

What industry suppliers failed to appreciate was that everyone in corporate America already had a telephone on his desk and was not terribly interested in spending \$3,000 for another. Those that needed a PC already had one, and most were disinclined to hook it up to the telephone system (for obvious reasons). In essence, the issue was whether this and other products of the day made any business sense. In retrospect, they did not, and the recession of 1985

was on its way.

In 1989, we are seeing the fruits of the same insanity. Vendors are trying to find creative ways to unlash MS-DOS and its applications from corporate desktops to make room for new products whose real purpose in life is to refill the vendors' rapidly depleting coffers.

As an example, consider the noise levels surrounding such industry favorites as OS/2 and Personal System/2, EISA and Micro Channel, and a new flock of common user interfaces that require 4M to 5M bytes of memory on every desktop. Then we have client/server architectures and object management concepts that not even the techies can seem to define. While presented as the foundation products for a "brave new era in computing," the realities are still the same.

In today's market, these are solutions looking for a problem. Most users don't need them or want them, and they don't bring enough to the party to upset the status quo.

There is another glut in computing power in most organizations. Even those who don't need a PC have one, and most aren't terribly interested in spending \$5,000 to reproduce what they already have. In a phrase, the PC explosion that fueled the com-

puter industry in the 1980s is on the wane. That is why demand is down — and why vendors are going into a tailspin.

So, what are the messages for vendors in the future? First and foremost is the fact that new technologies will have to do a lot more than look pretty to be in demand. They will have to address real and pressing business needs before users will invest their hard-earned dollars. And, it is also clear that users aren't interested in playing the "technology turnover" games that fueled vendor fortunes in the past. Faster and cuter isn't enough when the price is backwards incompatibility. Users are interested in building on existing investments, not replacing them. That means a lot of these new mouse traps aren't going to attract any buyers.

Finally, there is the question of when the recession of 1989 will end and when we will see a new and robust computer industry in the 1990s.

The answer is simple: The recession will end when vendors stop announcing stuff and nonsense and provide products that address real needs. Until then, the vast majority of corporate America will merely compute on their existing resources. And the industry suppliers will languish in the penalty box.



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## Rifkin

FROM PAGE 21

plenty of money in the bank. There's a sense that the people at the top with all their stock and high salaries don't face the same hardships as the rest of us." Among clerical and administrative workers the pain is more acute because many are being shifted around involuntarily and genuinely fear for their jobs.

Olsen wants to pace down the work force by 10,000 at least, and he hopes it can be done through attrition. The fear at DEC is that the wrong people will end up leaving — the high-flyers instead of the deadwood. Some of that has already occurred in the workstation area and sales.

Adding to the concern is a sense that Shields' departure is a signal that incompetence will no longer be tolerated anywhere in the organization. Though no one will say outright that Shields was incompetent and therefore fired, it is no secret that Olsen was fed up with Shields' handling of sales and stripped him of his power base.

## Breaking tradition

Traditionally, it has been difficult or impossible to be fired at DEC for anything less than criminal behavior. That policy has changed.

"The message is spreading that people will randomly get canned for incompetence," the high-level engineer says. "There are various ways to encourage people to leave."

Into the mix comes the feeling from longtime employees that DEC has lost the entrepreneurial spirit that fueled its impressive growth. "There are too many bean counters around now," one engineer says. "It's plain silly to cut everyone's budget across the board, but the bean counters have spread into every nook and cranny."

A management consultant to the company adds, "They have introduced too many bureaucratic processes, and they are now trying to undo them. They know the problem. It's in their power to fix it. If they roll up their sleeves and go at it, they'll be all right."

Even in the gloom, there are pockets of light. Groups in which funded projects are keeping everyone busy and enthusiastic tend to remain optimistic. "A lot depends on where you are," one manager says. "The group I'm in is on the upswing so morale isn't quite as bad."

In these groups, there is a sense that some of the old style of DEC decision making may be returning. "The feeling is, don't wait for your boss's boss to tell you what to do, just go out and do it, take some risk," the manager says. "There's definitely an effort to reinstate that."

A management consultant who has observed DEC for more than 20 years suggests that DEC's current struggles are probably healthy. "Throughout its history, the company has always come out stronger from these periods," he says. "Ken Olsen is a genius has always been his ability to spot a problem and do something about it. To him, this is not a crisis, but a normal

problem-solving process."

Olsen's legendary status within DEC keeps him above the fray. He is still the "benevolent father" to most employees, except those high-level executives who know that he is up to his armpits in every DEC strategy decision.

Despite DEC's size, Olsen has managed to perpetuate the feeling among the rank and file that

his door is open to everyone, no matter how trivial the problem. Though most employees don't actually try to get to Olsen personally, there is a feeling that "If Ken knew this was happening, he'd never let it continue." His very presence offers a stability that only the most hard-bitten DEC folk ever question.

Olsen is putting his vast influence to work in the sales organi-

zation. He has personally gone out to the field and started righting the sales ship. Word is that the sales force, with Shields gone and Olsen urging them on, is now pumped up.

If Olsen can, through sheer force of will, spread such enthusiasm throughout the rest of DEC, his legend should endure forever. It won't be easy this time.



t six o'clock this Wednesday evening, representatives of ten exceptional organiza-

tions will assemble to break bread together in New York.

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## For some companies the 90's could be a feast. This Wednesday they'll get a taste.

and consumer products companies. Century-old corporations and firms with barely a decade behind them. Nevertheless they share overriding similarities.

Not the least of which is an optimism toward the future. Because these companies are America's most effective users of information systems. They are the top ten among the *Computerworld* Premier 100, an annual evaluation of information systems usage.

Of course this recognition merely symbolizes all the other important characteristics they share.

Each is endowed with talented change managers who view technology not as a cash drain, but as a profit generator.

companies have one other thing in common as well.

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# SYSTEMS & SOFTWARE

## SOFT TALK

Jean S. Bozman

### Oracle amid change



If Oracle were to be viewed as a spinning galaxy spinning in space, astronomers would be amazed to find the thing spinning faster and faster.

The new products would be the new independent business units (IBUs), or divisions. In recent weeks, two IBUs were added: a network products division and a graphics products division.

In addition, the Macintosh division was combined with the PC products division — and both have been combined into the desktop products division. Altogether, there is now a total of 16 IBUs, according to the company.

How can users, including those who attended the International Oracle Users Group Week held in Dallas this month, keep track of all the changes? How can they be assured that their products will continue to get the same care and attention they did before Oracle began its skyward climb toward the \$1 billion mark?

And yet the new structure of the corporation, like a rapidly spinning galaxy, could be vulnerable.

Continued on page 30

## I/O generation gap lies ahead

### ANALYSIS

BY J. A. SAVAGE  
CRS/STP

Those futuristic commercials about the family being together at Thanksgiving through a big-screen phone hookup may not be all that far off — only we can't get there from here.

To get there, computers would have to have a new breed of chips that could handle enormous amounts of data but that would also be incompatible with today's processors.

While chips blossom that are hundreds of times more powerful in successive generations, their power is hampered by bandwidth and the ability to pass data from processor to processor, processor to memory, memory to peripheral and so on.

The new world of high-volume data transfer is recognized by several vendors, most of which are in reduced instruction set computing (RISC) architecture. Their problem — and their customers' problem — is that increasing bandwidth requires tossing the old and investing in the new.

To keep continuity between chip generations, bandwidth interfaces has increased only slightly. "Over the last 20 years, the number of events that can occur on a chip has increased 100,000 times, but interfaces are less than 10 times faster," said John Mossouris, a founder of Mips Computer Systems, Inc. who is focusing on increasing bandwidth at his own startup.

Mossouris said the appetite for increased bandwidth will be insatiable once media turns to

### How much is enough?

Different communications functions require different bandwidths:

- Digital phone: 64 K bit/sec.
- Audio CD: 1.5 M bit/sec.
- HDTV (noncompressed): 1 G bit/sec.
- Cinema: 70 mm high-quality: 100 G bit/sec.
- Computer generation of cinema: 100 trillion bit/sec.

digitized remotes. Interactive video, high-definition television (HDTV) and digitized cinema

cannot get a foothold without necessitating a chip design that is incompatible with earlier generations, according to Mossouris (see chart).

"The only way to reduce the pain [of incompatibility] is to get people to agree on standards," Mossouris said. "At least all the new chips will be compatible with each other."

In that endeavor, the Institute of Electrical and Electronics Engineers, Inc. has a committee, called P-15.06, or the Scalable Coherent Interface Committee.

The committee is specifically working on a 16-bit-wide, 1G-byte bandwidth with 64-bit addressing, based on a 500-MHz signal. Conventional silicon will not be enough to drive it, said Michael Mahon, manager of client/server architecture at Hewlett-Packard Co. He said it will need emitter-coupled logic or BiCMOS technology, with those being possibly coupled.

Continued on page 34

## 4GL developers turn to distribution

BY ROBERT MORAN  
CRS/STP

Two fourth-generation language developers — Information Builders, Inc. and Must Software International — have sketched plans to prepare fourth-generation languages for distributed processing in the early 1990s.

According to IBM, its move toward a distributed systems application architecture will require a redesign of Focus into an object-oriented 4GL.

Achieving the goal, however, requires developments within several other parts of the Focus

architecture, which the company said it will tackle in phases.

In phase one, IBI will offer cooperative processing between the workstation and the mainframe. According to John Sencer, manager of corporate marketing, the company's communications software, Facenet, will offer users a choice between LU6.2 and LU2 communications protocols in the first quarter of 1990, with product availability shortly thereafter. At present, Facenet for IBM mainframe-to-DEC VAX connections is available for \$16,000.

In the same time frame, the

company will deliver its Application Control Environment (ACE) — a distribution library that will contain a catalog of users and servers authorized for particular applications, Sencer said.

According to the company, ACE will be delivered in the first quarter of 1990 and will cost between \$16,000 and \$19,200.

### Part two

In the second phase, the company will extend Facenet beyond LU6.2 to embrace other environments such as Transmission Control Protocol/Internet Protocol. The extensions will be an-

nounced in the second quarter of 1990, with product availability shortly after, Sencer said.

Although Focus has been running successfully on numerous individual platforms, it has lacked components that will tie these platforms together, said Chris Bell, a systems programmer at British Airways in London and president of both Fuse International and Fuse UK, the Focus user groups.

"Companies with large investments in Focus will be able to distribute their applications in a way that takes advantage of the features of the different platform that it runs on," he said.

The dividing line between the  
Continued on page 38

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## A Comparison Chart of the Major Cooperative Processing Software Products:

### Functions:

	SUPER-LINK® Family	Easel™	Mozart™	Arbiter®	IBM's HLLAPP	IBM's APPC™ or C/PL™
<b>Processing Topologies Supported</b>						
SAA/CUA interfaces for existing 3270 applications:						
Under PC/DOS	Yes					
Under OS/2	Yes	Yes	Yes			
Transition from PC/DOS to OS/2	Yes	Yes	Yes			
3270 Communications	Yes	Yes	Yes		Yes	
Peer-to-Peer Communications	Yes					
For extending existing 3270 applications for new applications	Yes					Yes
Maintenance of PC applications & data from a central library	Yes			Yes		
Personal file transfer in PC/OS/2	Yes					
Background peer-to-peer processing in PC/DOS	Yes					
Object Orientation	Yes	Yes	Yes			
CAS/CA/CA/CA/CA Generation	Yes					
<b>SAA/CUA Support</b>						
All functions supported on PC/DOS:	Yes					
Action Bar	Yes		Yes			
Full-down menus	Yes		Yes			
Pop-up menus	Yes		Yes			
Messages and Prompts	Yes		Yes			
Dialog Boxes	Yes		Yes			
Forms	Yes		Yes			
Direct support for multiple levels of action bars and pull-downs	Yes					
Action bars and Pull-downs in a form	Yes					
Single and multiple selection menus	Yes					
Menus and Lists within a form	Yes					
CUA defined lists	Yes					
<b>Development System Features: available without programming</b>						
Field-level context-sensitive help	Yes		Yes			
Optional learning mode (help always displayed)	Yes					
Embedded User Assistance (page-by-page links)	Yes					
Dictionary for storage and re-use of definitions & documentation	Yes					
Data Editing/Validation	Yes					
Data type/length checking	Yes	Yes	Yes			
Range/limit checking	Yes					
Data formatting/checking	Yes					
Validation against database files	Yes					
Required fields	Yes					
"Must Fill" fields	Yes					
Zero not valid fields	Yes					
Multiple validation paths during PC processing of transaction form	Yes					
Complete local application testing, database maintenance, interface testing, and real-time communications simulation	Yes					
<b>Language Objects Available Without Low Level Programming</b>						
Display and selection from:						
In-memory lists	Yes	Yes	Yes			
File lists	Yes		Yes			
Database lists	Yes		Yes			
Menu display and selection	Yes		Yes			
Help at all levels: (Panel, Action bar, Menu, Form, & Field)	Yes		Yes			
Error Processing	Yes		Yes			
Add/update/delete/locate, etc.	Yes		Yes			
Sequential files	Yes	Yes	Yes			
Database files	Yes	Yes	Yes			
Host screen sequence	Yes					
Determining 3270 screen identification	Yes		Yes			
Read/Write all fields on 3270 screen with a single command	Yes					
Determine dynamic 3270 field attributes - triggers	Yes					
Dynamic modification of field attributes based on form entries	Yes					
Initial values displayed	Yes					
Protocols supported	Yes					
<b>Development Environment Comparison</b>						
Object Orientation	Yes	Yes				
Dictionary and documentation	Yes					
Panel/Form painter for Creation/Maintenance	Yes	Yes	Yes			
3270 screen sequence Picture and attributes	Yes					
Application Generation (CASE)	Yes					
Intelligent editor (language sensitive)	Yes					
System user defined templates	Yes					
Integrated compiler/debugger	Yes					
Keyboard re-mapping	Yes	Yes	Yes			
Compiled environment	Yes	Yes	Yes			
Execution-time source debugging	Yes					
<b>Host Environments Supported for Peer to Peer</b>						
MVS - CICS	Yes			Yes		
MVS - DB/DC	Yes					
MVS - TSO	Yes					
DOS/VSE-CICS	Yes				Yes	
VM/CMS	Yes				Yes	
DEC VAX/VMS	Yes					
<b>Minimum PC Hardware Requirements: IBM XT/Clone, 640K</b>	Yes	Yes	Yes	Yes	Yes	Yes

\*Easel does not support the SAA/CUA style interface under PC/DOS only under OS/2.

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## Multi Soft's SUPER-LINK® Family delivers SAA/CUA on DOS platforms Now!

Multi Soft's SUPER-LINK product family represents the leading edge of cooperative processing technology. It allows the development of SAA/CUA-compatible user interfaces now on standard low-cost 640K DOS PCs. It provides the full peer-to-peer cooperative processing capabilities of IBM's APPC (Advanced Program-to-Program Communications) product for PC/host applications. However, instead of requiring the use of LU6.2 SNA sessions, it works over the LU2-based networks that are already in place. Both standard, LU2-based SNA links, as well as asynchronous communications are supported. Not even IBM offers that kind of support now. All SUPER-LINK based applications port without change to IBM's OS/2, PM, and LU6.2 strategic platforms.

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# Banking on a CASE project

Huntington National's Customer Information System becomes its hub

## ON SITE

BY SALLY CUSACK  
COWLEY

COLUMBUS, Ohio — When a major company is switching mainframe vendors, building a new data center and converting existing software applications, the last thing the IS manager wants to do is break ground on a computer-aided software engineering (CASE) project.

But Huntington National Bank in Columbus, Ohio, with \$10.2 billion in assets, did just that, and according to John Voss, vice-president of systems integration, so far it seems successful.

When the systems overhaul is completed in mid-1990, the bank expects to have built a foundation allowing the bank to move forward in a more timely manner and solve business problems more quickly with regard to both packaged software and internal development.

### Software advantage

About three years ago, Huntington — which had been running systems from Unisys Corp., predecessor Burroughs Corp. for nearly a generation — decided to take its 1.4 million accounts and house them in a new data center on an IBM 3090 Model 300E mainframe to take advantage of the greater availability of software for IBM environments.

While Voss and his team were painstakingly pounding out a conversion strategy comprising off-the-shelf conversion packages and specially licensed conversion software products, they certainly were not looking to undertake a CASE project. But in the dust of the conversion work

the possibility surfaced.

With an eye toward enhanced customer service, the bank decided to create in-house software tailored to its customer needs. This required an integrated method for handling customer accounts and information. The goal was a comprehensive customer account profile, including



Huntington's Voss was not looking to try CASE

client demographic information and data on multiple accounts, to be produced on a single screen and a single statement.

Early in 1988, Arthur Young was hired as a technology and methodology consultant and eventually suggested Knowledgeware's Information Engineering Werkbereich (IEW) for the project's initial data analysis and modeling platform.

"As we moved further down the road we asked ourselves, 'What comes after analysis?'" Voss recalls. "We wondered if it was possible to do automated code generation out of analysis. We looked at Knowledgeware's Gamma back-end generator and realized it was not interfaced, let

alone integrated, with the IEW front-end generator."

It was then that Voss remembered hearing about a CASE tool offered by Texas Instruments, Inc., the Information Engineering Facility (IEF). He contacted TI, half hoping that nothing would come of the presentation and the CASE issue would die. The presentation went well, however, and Voss admits that he felt obligated to request a product demonstration.

In March 1988, Voss' staff spent two weeks building a prototype of their Customer Information System (CIS). Pleased with the outcome, Huntington committed to the project.

IEF is an integrated set of

CASE tools that generates program code, databases and systems documentation automatically. The product reportedly permits systems analysts to design the systems via diagrams developed on computer workstations. System code is generated automatically from the diagrams. According to Voss, TI remained on-site in Columbus through October 1988 to provide training and support.

The bank is running the CIS system under IBM's DB2 Version 2.1. The database runs online, 24 hours a day in an MVS/ESA environment and handles data access in both online and batch modes. Voss said. While referring to CIS as the "hub of our application system," Voss notes that a decision was made to keep a Unisys machine for check processing, and the bank opted to become one of the first users of the Unisys image

processing system announced last month. A Unisys V-590 machine recently arrived for that purpose, so in effect, the bank will be running in a dual environment.

The overall conversion process is about 90% complete. The larger applications, such as demand deposit, took four months to convert, Voss said, adding that applications ran parallel on the IBM and the old Unisys B-4955 systems for several months as part of the testing process, beginning in late 1986.

There are now 1,200 users on the CIS system, and the CASE investment has apparently paid off. The system has been very reliable, Voss said. "Our transaction productivity has increased. When changes have been necessary, which is seldom, we simply revise the IEF diagrams and automatically regenerate the code."

## FPS rolls out enhanced minisupercomputers

BY ROSEMARY HAMILTON  
COWLEY

BEAVERTON, Ore. — FPS Computing will roll out a new version of its minisupercomputer today, targeting it straight at Convex Computer Corp.'s offerings.

FPS also plans to introduce both a disk drive subsystem and tape subsystem for its Model 500, based on Expandable System Architecture (EA).

The Model 500EA is said to offer up to 2.5 times the performance of FPS' existing system, the Model 500. The Model 500EA will start at \$204,000, but a typical configuration will cost about \$421,000, the company said.

The main differences between the Model 500 and 500EA are a vector processor, which brings the performance boost, and a modular architecture, which allows users to plug in systems components as the need arises.

### Same RISC

The system is based on the same proprietary reduced instruction set computing (RISC) processor that is used in the Model 500. The company is keeping an eye on RISC market developments and could likely move to one of the emerging RISC chip standards in the future, according to Carolyn McClain, an FPS senior product manager. She said FPS has no immediate plans to make

a commitment to a RISC chip.

As with the Model 500, users can add up to four processors, either scalar or vector.

FPS said it has begun shipments of a modified Model 500EA that includes the vector processor. It will start shipping a full-blown system, which includes a new enclosure and backplane to accommodate the modular architecture, in the first quarter of next year.

Model 500 users can upgrade to the system by purchasing an enclosure and backplane for about \$80,000, McClain said. Existing Model 500 components can then be plugged into the system, she added.

The company plans to offer a disk subsystem that has a transfer rate of 6M bytes/sec., which is twice as fast as the current subsystem.

The 200 in./sec. tape subsystem will work with IBM 3490-compatible tape cartridges, the company said.

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## Bozman

FROM PAGE 25

nerable to centrifugal forces at its furthest points. Some of Oracle's star products could spin out of control and lose their connection with the stable center. Many of the 3,600 users who attended the users meeting say they already have to keep a

sharp eye on products to monitor their trajectory through enhancements, fixes, patches and changes. Even the older products, such as Oracle Version 5.0, are continually being patched as new bugs are found. User special-interest groups can attest to that fact.

At this rate of change, cynical observers might predict a supernova somewhere down the

line. But Oracle Chief Executive Officer Larry Ellison and Peter Tierney, senior vice-president of Oracle's systems products division told reporters and analysts attending a briefing session here that two key oversight committees will keep things from spinning out of control.

A product management committee, headed by Chief Financial Officer Jeff Walker,

takes a look at emerging products to make sure they all fit with the core Oracle product, the Oracle DBMS, Tierney said. The committee of six includes Ellison, Tierney and Oracle co-founder Bob Miner.

Since the product management committee reviews each division in turn, individual IBUs are "cycled through" the oversight process once per quarter,

Tierney said. Moreover, Tierney said, an architectural committee "meets weekly to review IBU products to see if they fit into the overall scheme of what we want to do." The architectural committee reports directly to Ellison.

Quality, Ellison said here, is something Oracle does not want to lose, no matter how fast his 12-year-old company pushes past its current mark of \$400 million in revenue. The IBUs were formed last fall, Tierney explained, to accommodate Oracle's rapid growth, which is being pushed by the start-up-like warp drive of Oracle's marketing and sales forces.

The analysis of Oracle's top managers, it seems, is that software writers are more productive in smaller working environments. In software, less is more.

So it is with elegance in software design — something Oracle would like to believe it is achieving. "The question was how to forecast the growth of a bureaucracy as we grow to a \$1 billion company," Tierney told the analysts. "The question is, how do you embrace that growth and not inhibit it?" The answer, it seems, is the modular IBU structure.

As Oracle pushes into new sectors of the software universe — including a dramatic reach into financial and manufacturing applications software — one can only hope that these policy and architectural committees have a firm hand on the Oracle tiller and can make judicious corrections, if necessary.

*Bozman is Computerworld's West Coast bureau chief.*

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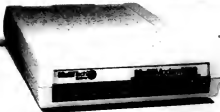
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## NEW DEALS

## Unisys nails down two

Northern Trust Co., a financial institution based in Chicago, is planning to purchase a payment system from Unisys Corp.

The system will include a Unisys V380 miniframe, DP1800 reader/printers as well as the Unisys Item Processing Systems software, which is used for check processing.

Northern Trust Co. is a subsidiary of Northern Trust Corp.

Unisys also sold a \$1.5 million miniframe-based system to Sonneveld Co., a wholesale food distributor based in Grand Rapids, Mich.

The system, based on an A12 miniframe, will be used to link Sonneveld to its retailers, which are, for the most part, fast-food restaurants and delicatessens. With the use of desktop systems, the retailers can place orders for food supplies directly from Sonneveld.

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**Hitachi Data Systems**

## DG bares teeth to mini rivals, shows client base a loyal face

BY MARTHA JOHNSON  
OF WASH.

WESTBORO, Mass. — As Data General Corp.'s latest entry in the minicomputer price/performance wars, the new Eclipse MV/18000 could be both a comfort and a cankerous competitor.

It may be a comfort for some 2,300 owners of older MV/15000s, who can now move to a cheaper but more powerful machine with fully compatible architec-

ture. It may be a competitor for both IBM's Application Systems/400 Model B50 and Digital Equipment Corp.'s VAX 6000 Model 310, which DG claims are 30% to 83% more expensive, respectively, than the MV/18000.

In three models priced from \$73,000 to \$139,000, the MV/18000 is a fill-in-the-line product for DG, industry analysts said. The company also announced two new disk subsystems providing from 1.2G to 9.6G bytes of storage.

"Data General's installed base should feel comfortable; the company is putting resources into the MV technology and not making it an orphan," said Byron Walker, an analyst at Moody's Investor Service in New York.

"The 18000 is a perfect example of an in-between machine. It's a fairly good strategy to show their commitment to the client base," agreed Carolyn Griffin, an analyst at International Data Corp. in Framingham, Mass. "I firmly believe DG has a good handle on their strategy," Walker said. "But with everybody moving toward RISC now, what kind of margins will there be on these [RISC] products? The real margins are in the proprietary lines."

"Data General has come a long way in a short time," said Clifford Allmon, direc-

tor of MIS at Memorial Hospital in Chattanooga, Tenn. "Only months ago, DG was in trouble, and everybody was shying away from them. But I felt like they were going to come out of it, so we pursued the orders we had."

The hospital just upgraded its three MV/8000s with installation of three MV/15000s.

**Excited about upgrading**  
Allmon said he was excited about the MV/18000 because of the upgrade paths for memory and storage, but he lamented the \$176,000 price tag on each of the older MV/15000s. "I could have bought two of the 18000s for that," he said.

The MV/18000 Model 1 is a uni-processor machine packing 4.4 million instructions per second (MIPS) and priced at \$73,000.

IDC's Griffin said the company was unwilling to provide benchmark comparisons between the new machine and its competitors.

The Model 1 base system includes 8M bytes of memory. The \$139,000 Model 2 is a dual-processor box rated at 8.5 MIPS and includes 16M bytes of memory.

The SX base system model is a Model 1 configured with a floating point unit and costs \$77,500.

The 1.2G-byte Model 6621 Rapid Access Mass Storage disk subsystem, priced at \$35,300, offers more than double the storage capacity of the existing Model 6561. It is scalable in 1.2G-byte increments up to 9.6G bytes.

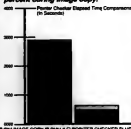
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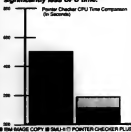
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## I/O gap

CONTINUED FROM PAGE 25

with their optics.

Because the bandwidth group is addressing a future need rather than fixing up the current bus technology, the politics of business may slow product introductions. HP, for instance, has a group working on a "future bus" based on conventional design but altering voltage swings. "They were concerned they'd be headed off at the pass," Mahon said. "The standards [committee] has cooled a bit in the last year."

The committee's main problem is addressing the "scalable" process — to make sure that multiprocessor design can increase bandwidth with each additional processor, according to Monossauris.

"It's not so much exotic high tech as just good judgment that people can agree upon," Monossauris said.

### Focus on processors

The committee is focusing on processors, rather than dynamic random-access memory (DRAM), as there are fewer RISC processors to use, which allows more flexibility. In its charge, DRAMs at this point would cancel out too much of an investment, although memory bandwidths would have to be addressed at some point.

In fact, each part of the computer should be addressed on the bandwidth level. "If there are 10 different places in the system to increase bandwidth and only nine of them are increased, you'll still have a bottleneck," Monossauris said.

Monossauris expects high-bandwidth chips available before the mid-1990s. "But their acceptance is more of an issue of market penetration than availability," he said.



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## 4GL

## FROM PAGE 25

first two stages and the third stage will be a complete rearchitecture of Focus into an object-oriented language.

"The objective is to deliver interoperable systems in which any application on any server will be interoperable with any server on any other machine," Senor said.

According to the company, it will announce and deliver an object-oriented Focus in the first quarter of 1991, including universal communications capability within Focnet and object servers — databases that will reside on each platform and contain the executable objects.

While IBI has been aggressively broadening the types of processors it claims will be able to participate in its distributed framework, Must Software said that it is "out of the processor wars" and is restricting itself to Digital Equipment Corp. and IBM Systems Application Architecture platforms.

Must Software calls its move to distributed processing Nomad Vista. According to John Crocker, vice-president of product planning, Must Software aims to bring to the applications developer the same degree of transparency available to end users today.

According to Crocker, the developer will be able by 1992 to split the application down to a functional level where certain functions execute on the workstation while others execute on

the midrange or the mainframe. "The person developing the application won't need to worry about where the application will reside," Crocker said.

However, like IBI, Must Software will roll out its offering in phases. In phase one, Nomad will allow a workstation to access remote databases without needing programs at the remote site or the user needing to know whether

the site is a local-area network, an IBM mainframe or remote VAX, Crocker said.

Toward that end, in the second quarter of 1990, it will deliver PC Nomad for LANs, comply with IBM's Common User Access and offer an OS/2 version. PC Nomad costs \$795; the new release will cost \$1,195, Crocker said. In addition, Nomad will support DEC's relational data-

base in the third quarter of 1990, with prices increasing by 33%.

In the first half of 1991, the company will also support access to the IBM Application System/400. In the second half of 1991, Nomad will run on the AS/400.

Must user Lloyd Erickson, an electronics engineer in the data processing systems division at the Johnson Space Center, said

cooperative processing would dramatically reduce response time.

"Every time we send a command to the mainframe, it requires three or four seconds to cross the network, even if it is trivial," Erickson said. "With a PC you can have things flesh right in front of you almost as fast as you can push the buttons."

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## NEW DEALS

Sequent signs  
\$1.3M deal

Sequent Computer Systems, Inc. and CLSI, Inc. announced a \$1.3 million deal with the Pasco County school board in Pasco County, Fla. The school board plans to automate the school district's 40 libraries with a Sequent Symmetry-based system. CLSI will provide the software for circulation control, cataloging and purchasing. The four-processor Symmetry will support about 200 terminals.

Intellisys, Inc. in Syracuse, N.Y., plans to use a Harris Computer Systems Division computer for work on its proposed design of the U.S. Navy's Command Test Trainer (CTT). The Harris system is a Night Hawk 3000 real-time computer with eight Motorola, Inc. MC68030 processors.

CTT is a training system designed to simulate both the equipment and the human decision-making process involved in military missions.

## NEW PRODUCTS — SOFTWARE

## System software

Advanced Systems Concepts, Inc. has announced its Remote Queuing Extended (RQE) Version 1.0 package for Digital Equipment Corp.'s VAX Decintact TP monitor and IBM's CICS

transaction processing system.

RQE was developed to provide a seamless, transparent approach to resource sharing between DEC and IBM transaction processing systems, according to the vendor. The product is said to communicate by using Systems Network Architecture

LU6.2, the firm said.

RQE/VMS provides DEC VAX programmers with transparent access from Decintact queues to and from CICS Transaction Data Sets.

It is priced from \$10,000 to \$35,000, depending on CPU. RQE/CICS reportedly uses a conversational interface for system management and is priced from \$35,000 to \$50,000, de-

pending on CPU platform.

Advanced Systems Concepts  
33-41 Newark St.  
Hoboken, N.J. 07030  
201-798-6400

## Applications packages

Arthur Andersen & Co. has announced Cell-Pac, a computer-integrated manufacturing (CIM)

software package that manages the operation of a manufacturing shop floor plant.

The product was reportedly designed to operate either as a stand-alone cell controller or in conjunction with factorywide systems. The software reportedly performs such functions as scheduling and dispatching of work, resource control, monitoring of machine status and quality control. According to the company, the program is hardware-independent and written in C language to run under Unix System V Version 3.0.

Pricing begins at \$50,000 per copy.

Arthur Andersen  
33 W. Monroe St.  
Chicago, Ill. 60603  
312-580-0033

J.L. Computer Systems, Inc. has released Version 3.0 of its Business Software packages for Digital Equipment Corp. VAX computers running under VMS.

Enhancements reportedly include window processing with selection menus and pop-up displays, an on-screen adding machine for numeric and dollar entry field calculations, and data entry.

The integrated system also is said to include a base module, accounts-payable and accounts-receivable, general ledger, payroll, inventory and a variety of other applications.

The software is offered through distributors and dealers as licensed source code, the company said. The suggested retail list pricing ranges from \$2,640 to \$7,200 per application package, depending on hardware platform.

J.L. Computer Systems  
3403 Lancaster Ave.  
Wilmington, Del. 19805  
302-998-8030

Information Science, Inc. has released Comply/89, a human resources management system that reportedly has been designed to help companies meet the federal requirements of Section 89 regarding corporate benefits programs.

The system works in an IBM mainframe environment using existing data from various sources, including third-party human resource software, the company said. The stand-alone version is said to include both a high-speed data entry module that uses IBM 3270 terminal or personal computer emulation devices and a generalized analysis/reporting tool.

License options vary depending on the user's current system. For example, users of TSI International's Key/Master can license the product for \$2,000 to \$5,000, depending on the IBM processor used.  
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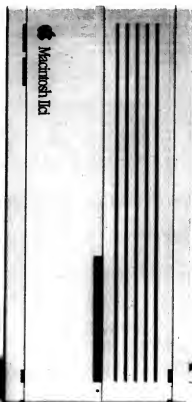
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\*On-board video is engineering progress that means you can plug in any Apple<sup>®</sup> II<sup>®</sup> RGB color II<sup>®</sup> monitor, or II<sup>®</sup> personal monitor and start gaming. Other monitors may still need a video card. © 1989 Apple Computer, Inc. Apple, the Apple logo, A/UX, and Macintosh are registered trademarks of Apple Computer, Inc. NuBus is a trademark of Sun Microsystems. UNIX is a registered trademark of AT&T Information Systems.

# PCs & WORKSTATIONS

## MICRO BITS

Patricia Keefe

### Ease away from EISA

**Put a lid on it.** A Texas source reports that Compaq's board of directors delivered that message to founder Rod Canion recently on the subject of Extended Industry Standard Architecture (EISA). Seemingly Canion and company were spending so much time boosting EISA, there was some concern that Compaq was becoming too identified with it. The fear here was that if EISA fails to grab buyer interest, it will reflect particularly badly on Compaq.

Canion reportedly was told to get moving on an internal Micro Channel Architecture (MCA) box — just in case. Of course, Compaq is planning a big splash with its Intel 486-based EISA boxes next November, and that MCA box may never, and that MCA box may never.

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#### Inside

- Home Express uses SQL to generate customized merchandise reports. Page 43.
- FM service feeds newsmagazine executives. Page 43.
- 1486-based hardware hits will be here soon. Page 45.

## Next business software up next

### ANALYSIS

BY JAMES DALY  
CW STAFF

Business software developers have given plenty of lip service to Next, Inc.'s splashy hardware package, but deliverable corporate applications have so far been harder to find than vegetables at a wienie roast.

That imbalance is finally expected to change over the next four months, as more and more business software developers host coming-out parties for Next-oriented applications, according to a spokesman at Businessland, Inc., which distrib-

utes the machines.

"We're looking at lots of spreadsheet packages as well as word processing and front-end database applications," said Kevin Compton, director of advanced systems at the San Jose, Calif.-based computer retailer.

Developers interviewed recently said the arrival of the Next operating system in mid-September gave them a real-life yardstick against which to measure their product and hence has moved up release dates.

Despite the assurances, however, analysts warn users not to expect a broad and deep selection of software for the corporate market for the next six

months to a year. "Software takes a long time to write, especially if developers intend to fully exploit all of the Next machine's potential," said Amy Wohl, president of the Bala Cynwyd, Pa.-based Wohl Associates research firm. Wohl added that the availability of such applications is critical to the company's long-term success in much the same way the availability of popular records will drive up the market for stereo systems.

#### Cash flow grows

Next officials said they hope to ship 3,000 to 5,000 machines this year and are tapping into the academic market for much of

Next's cash flow. Meanwhile, deep-pocketed investors such as Canon, Inc. have poured more than \$100 million into the Redwood City, Calif., firm.

Since Next's introduction a year ago, the innovative engineering performance of Next President and Apple Computer, Inc. co-founder Steve Jobs has kept developers' tongues wagging. "They've finally married the power of Unix to an accessible user interface," said Rick Davis, director of product marketing at Frame Technology Corp., which shipped a Next version of its Framemaker 2.0 publishing software earlier this month.

Most of the converted are they are sold on the machine's sexy technologies, including the use of erasable optical storage

Continued on page 48

## Expert system chip may ease integration

BY ELLIS BOOKER  
CW STAFF

A microchip specifically designed for expert system applications on personal computers and workstations has been developed by custom microprocessor maker International Chip Corp. (ICC) in Columbia, S.C., and Ricoh Corp. in West Caldwell, N.J.

One analyst said development of the chip may be a step toward more closely integrating expert system applications with mainstream computing.

In an earlier announcement, ICC said it has developed

an applications development tool kit called the Rule Compiler, which ICC President and CEO Tai Sugimoto claimed is easier to use than standard artificial intelligence languages such as LISP and Prolog.

"Our target audience, commercial users, have had to depend on knowledge engineers or programmers to create applications," Sugimoto said. "Our compiler allows the subject matter expert to build applications by following [a series of] prompts."

Sugimoto said the Rule-Based Expert (RBE) very large-scale integration chip can process 1.67

million "if-then" rules per second in a test, assuming one condition and one action per rule. The company claimed that is 50 to 100 times faster than existing commercial chips such as Intel Corp.'s 80386.

Normally, expert systems are developed in software and feature two components:

an "inference engine" composed of "if-then" rule sets and a "knowledge base" of subject-specific data. The RBE chip is the first chip to contain the inferencing mechanism, Sugimoto claimed.

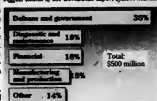
"In a Rex chip, only the needed inference instruction set is used," said

Sugimoto, who added that these instructions are the equivalent of four to six sets found in general-purpose chips. The Rex board itself provides a storage capacity of more than 21,000 committed rules.

Continued on page 45

#### Mixed bag

Defense and government applications represent the biggest chunk of the worldwide expert system market



SOURCE: IBI, INC.

FIGURE 1: EXPERT SYSTEM MARKET

## The COBOL Programmer Workstation and Its Impact on Productivity The Micro Focus Developers Conference 1989 Schedule

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# Retail strategy banks on SQL

## ON SITE

BY RICHARD PASTORE  
CW STAFF

HAYWARD, Calif. — To better manage merchandise movement, the retail industry has increasingly exploited such devices as handheld data-entry machines and point-of-sale systems.

Now, a 12-store housewares and electronics chain has implemented an innovative system that melds SQL Server and spreadsheet software capabilities to provide user-customizable merchandise reports.

Users at Home Express, Inc. headquarters here can for the first time generate customized merchandise research reports simply by manipulating and rank-

ing store sales data within the familiar parameters of Microsoft Corp.'s Excel spreadsheet program.

The brain behind the setup is the Microsoft/Ashton-Tate/Sybase SQL Server, which dishes out pertinent sales data into Excel spreadsheets files on request.

### Time saver

The key benefit of the system is that it saves the information systems department Cobol development time while providing users with the tailored reports they want.

"I've wanted to do this ever since I used a spreadsheet program, but no one knew how," said Robert Berger, senior vice-president of administration, who implemented the system.

"Before, we would have 10 different buyers who wanted to see information at 10 different angles. To try to recode report writers in Cobol for every shade of user interest was horrendously expensive," Berger said.

With more timely and pertinent merchandise movement reports, management has been able to sharpen its advertising efforts, Berger said.

"We wanted to know whether advertised items were drawing customers to come in and purchase additional items, but there was no effective way to measure it" before the new system was installed, Berger said.

With the SQL Server/Excel setup, users can rank advertised items based on how well they sell in each store and how well they generate ancillary sales, which is

the whole point of so-called loss-leader merchandise. This ranking reveals to managers and buyers which items are more effective loss leaders, and consequently, the chain can optimize its advertising.

For example, Home Express advertised a television set for a below-cost price of \$57, hoping to generate ancillary sales of high-margin items. The system showed that "customers were

*Continued on page 48*



Home Express' system focuses advertising efforts

# Broadcast news to see brighter day, PC style

Stock drop stresses faster information access

BY PETER BARTOLIK  
CW STAFF

Another stock market plummet or two just might serve to break open the slowly evolving market for FM transmission of real-time news feeds.

"This technology really showed its value over the last four days," said Donald L. McLagan, president of Witham, Mass.-based Desktop Data, Inc., a few days after the Oct. 13 stock drop.

Desktop Data's Newsedge product can capture up to five radio-transmitted news feeds and store them in an indexed personal computer database. It then signals the user when a story matching a user-selected profile is received.

McLagan's company is the latest to bank on the concept that business executives want

more information than tomorrow's newspaper will bring them and that they want it when it happens.

In late July this year, Pilot Executive Software announced it had formed an agreement with McGraw-Hill News to integrate the McGraw-Hill, Inc. division's FM feed into its Pilot EIS executive information system. Lotus Development Corp., through an acquisition, began offering its Signal system, which provides a stock quotation news feed, in October 1985.

"More is better, particularly if you can filter it," said Jude T.

Garland, senior vice-president with the investment banking group at Shearson Lehman Hutton, Inc., who has viewed Desktop Data's Newsedge product and will be one of 24 beta testers over the next few weeks.

Without question, there are services aplenty seeking to provide all the news you can use. Desktop Data has signed up McGraw-Hill News and PR

Newsline, and the company will offer to its beta testers Dow Jones & Co. Inc.'s Dow Jones News/Retrieval and Dow Jones Professional Investor Report services, in addition to Reuters PLC's Reuters Financial News.

The organization responsible for the transmissions is offering similar services for more than 20 organizations, from the Associated Press to more specific services such as Federal Plunge, Inc.'s reports on Securities and Exchange Commission filings, ac-

cording to John Bension, marketing manager of Mainstream Data, Inc. in Salt Lake City.

Mainstream provides FM transmission to a 50-mile radius in 13 major metropolitan areas, which Bension said covers 50% of the U.S. population.

### Don't count on cheap

Such service is not cheap. Desktop Data will offer annual subscriptions ranging from \$7,500 for a starter kit that includes McGraw-Hill and PR Newsline to \$40,000 for five services.

However, said David Marshall, an analyst with Patricia Seybold's Office Computing Group, that price is "nothing for the information junkies."

And, he added, most companies have two or three library-type employees maintaining clipping files on business news activities, and they would find these costs to be insignificant.

But FM transmission of data has certainly not spared any general market, although the financial industries have latched on to various real-time stock quotation services.

Lotus' Signal, for example,

has not grown as rapidly as the company expected, according to Steve Sieck, vice-president of electronic services at market research firm Link Resources Corp.

He estimated that it has 12,000 to 15,000 subscribers, with most of them using the Lotus handheld Quotrack device rather than the PC-based service.

A spokeswoman for Lotus, which recently was reported to be trying to sell off Signal, said that the estimate was high but declined to provide specific figures.

McGraw-Hill News marketed its own Executive One service for a brief time, providing information from various McGraw-Hill news operations via FM transmission.

But McGraw-Hill determined that customers "were making sophisticated requests to the software that we weren't in a position to handle," said Anthony Durnick, general manager at the firm, and so has decided to work with software companies to provide the interface and manipulation capabilities needed to meet those demands.



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11. Is your computing system unable to run both DOS and OS/2 programs? How about the new SQL database applications?

## Market readies itself for bevy of 486-based hardware introductions

BY PATRICIA KEEFE  
COWI

During the next two months, power users and networks pressing against the limits of the formidable 33-MHz 386 platform will be showered with the fallout of a veritable avalanche of Intel Corp. 486-based hardware.

These products typically will ship in volume in January and will cover the gamut from add-in cards to upgrade boards, desktop computers and file servers.

Pricing varies widely for 486 desktop computers, ranging from \$9,000 to \$25,000.

Already, IBM, Hewlett-Packard Co., Inc. C. Olivetti & Co., AST Research Corp. and ALR Corp. have either detailed plans or rolled out add-in cards and desktop computers featuring the 486 chip—some with the Micro Channel Architecture (MCA) bus and some sporting the rival Extended Industry Standard Architecture (EISA).

In two weeks, Compaq will kick off the flashiest 486 fest by far at a day-long conference in Houston featuring borders of supporting products from network adapter cards to graphics and memory add-in boards.

Fremont, Calif.-based Copan U.S. last week introduced a 486 EISA computer said to feature 2M bytes of memory, expandable to 16M bytes, and eight slots—four IBM AT-compatible and four EISA. Pricing details were unavailable.

### Europe likes it

Europe, too, is proving a hotbed of 486 announcements. Besides IBM and HP, which unveiled their new platforms both here and abroad, Olivetti, Tandon Corp., Research Machines, American Mitac Corp. and the Netherlands-based Tulp Computers have introduced 486-based machines in the last 30 days.

The most recent introductions come from Tandon and Research Machines.

Tandon unwrapped its 25-MHz 486-based EISA desktop computer in London two weeks ago, rejecting upgrade 'power'

modules as too restrictive.

"We are using the Intel EISA chip set but have added custom technology to enhance the performance," founder Judi Tandon said.

Tandon claimed it has designed the computer's bus to accommodate the 33-MHz version when it is available. To further boost the machine's performance, the company has added "posted writes," which reportedly accelerate processor-to-memory writes much as caches improve memory-to-processor-read characteristics.

The 11.7 million instructions per second (MIPS) machine's BIOS has been extended to include automatic EISA adapter card recognition and configuration, eliminating the need for reference diskettes.

There are six 32-bit EISA slots that can also take conventional IBM PC AT-type cards; the motherboard also has two 16-bit AT-compatible slots to accommodate any AT-type card that encounters problems when inserted in an EISA slot. "It's good insurance for the user," Tandon said.

### Olivetti's EISA standard

Olivetti (CW, Oct. 23) has also standardized on the EISA bus, while American Mitac Corp. introduced an 80486 MCA PC and Tulp unwrapped the TR 486, its 486-based PC running on the ISA-standard bus.

Research Machines plans to take a whack at the Unix-based engineering workstation market with its RM VX486. Positioned as a "personal workstation," the RM VX486 comes with either DOS or OS/2 as its pre-processor for Unix. The 10.4-MIPS machine also utilizes the firm's OverDOS technology, which is said to allow DOS programs to use memory above 640K bytes.

With its 32-bit memory bus, 2M to 16M bytes of 80-nsec. close-coupled random-access memory (RAM) can be specified. Its basic offering features five ISA expansion slots.

PC Business World, a CW affiliate in the UK, contributed to this report.

## Expert system

CONTINUED FROM PAGE 41

According to its makers, the Rex chip works with the existing software resources of a PC or a workstation. For example, a user could set up expert system rules to automatically input or process fields in a Lotus 1-2-3 spreadsheet.

Harvey P. Newquist, publisher of "AI Trends," a newsletter in Scottsdale, Ariz., said other firms have implemented aspects of AI in silicon before.

"Texas Instruments and others have LISP chips," he said, adding that LISP is a prime component of expert systems. However, he added, "It can also be used for graphics."

### Some AI interest

A small segment of the marketplace might demand a chip optimized for AI applications, much as "most users don't require a math coprocessor, although there is a market for it," Newquist said. On the

other hand, he observed that the trend is toward "integrating expert systems, AI and natural language products into other areas" and making them run on standardized machines with mainstream applications.

Ricoh Corp. parent Ricoh Co. Ltd., Tokyo, which is manufacturing the Rex chip and board, earlier this year took a 25% stake in a 4-year-old, privately held ICC. The sample unit price for the Rex board—a beta test for the product began in early October—is \$1,500. The Role Compiler software will be similarly priced.

Along with the PC and workstation board-level products, machine-to-machine applications using Rex technology are under development, according to ICC and Ricoh.

The current Rex chip runs at 10 MHz for a maximum inference speed of 3.33 million instructions per second (MIPS). A second release of the chip will run at 20 MHz and double the MIPS rating, according to ICC.

## Keefe

CONTINUED FROM PAGE 41

or see the light of day. But at least one board maker that says it's been wooed by the EISA camp claims Compaq has been a lot quieter on the EISA front lately. If MCA outbids EISA on the desktop, you can bet you'll hear Compaq talk "MCA."

Smashed, but not stopped. 3Com may not be among the legions at Compaq's EISA/486 unveiling — Compaq sees 3Com as a competitor in the server hardware wars — but the following day, looks for 3Com to unveil a 486/MCA-based accelerator board for its recently introduced 80386-based 3Server/500.

Excel Killer? Lotus Development's 1-2-3-G, a version of its popular spreadsheet running under OS/2 Presentation Manager, goes into beta-testing shortly. A source recently got a good look at 1-2-3-G and said it is looking a lot like Microsoft's Excel. "Visually, it is radically different from what current Lotus users are accustomed to," the source said.

Lotus has added Solver, a goal-seeking attribute that allows users to do what-if scenarios, and is utilizing cascading menus, which are typically found in Unix applications. Key strokes are generally

the same, although users will have to learn a few new steps, the source said.

Only the beta users know for sure. Microsoft Chairman Bill Gates was overheard at Info demanding to know, "Is [Lotus Development President Jim Manzi] or is he not going to ship Notes with Windows support within the next 60 days?"

The answer is yes, but only because Notes is groupware, a Lotus spokeswoman said. Since Lotus owns an estimated 70% of the DOS spreadsheet market, it is unlikely to turn its nose up at Windows if sufficient demand surfaces, she added. Lotus reportedly is hard at work on a Windows version of 1-2-3.

Start a fire. Direct sales of LAN Manager to end users? Microsoft and 3Com deny it's inevitable, but some users and analysts see a need for it. "They should have a shrink-wrap version of LAN Manager on the market," said David Pero, a Datasquest analyst. "It would probably help everyone."

A user at American Airlines seconded that idea, noting there are times when he'd rather not wait for vendors to solve his problems, preferring to plow ahead himself. Such a product would not hurt 3Com, and could in fact fire up the market, admitted Alan Keefe, 3Com's marketing director for the Distributed

Systems Group.

Money talks, proprietary walks. Sales are down all over, a tune that is not playing well among the boys who sing loud and long about serving all LANkind. Faced with the prospect of shipping more pink slips, Novell will make a pitch for the LANtended attention by preempting the upcoming LAN Manager announcement next month [CW, Oct. 23]

**S**ALES ARE DOWN all over, a tune that is not playing well among the boys who sing loud and long about serving all LANkind.

with two briefings in the two weeks preceding.

In addition to laying out strategy designed to ensure that various LAN Manager offerings consist and hosting demonstrations of the latest crop of shippable LAN manager-based products, Microsoft is also expected to detail strategic directions for Transmission Control Protocol/Internet Protocol (TCP/IP) and Open Systems Interconnect (OSI) support.

Taking a page from the same book, Novell said it will talk (again) about its OSI support plans, including X.400, X.500 and naming service plans. The underlying issue here is not really OSI support, but

what some might say is Novell's acknowledgment that it must back away from rigid adherence to its proprietary IPX/SPX protocols to open up the enterprise to Netware users. Since Novell has so many undeliverables on its plate now, a shippable product seems unlikely. But former Novell VP Craig Burton, now a consultant with Clarke Burton, notes that one of the reasons Novell bought Executive was for its (surprise!) OSI expertise.

Separately, an NCR Corp. announcement on Halloween will spotlight the first delivery of a Portable (Unix) Netware-based server. NCR will also announce two new Tower server products.

An Apple day. Microsoft reportedly will license technology co-developed by 3Com and Pacer that provides both LAN manager support for Apple Macintoshes and compatibility with Apple's AppleLink File Protocols. 3Com will demonstrate 3-Open for Macintosh at its Network System Forum being held this week; it ships in the first quarter. Asked to confirm the deal with Microsoft, 3Com founder Bob Metcalfe declared: "Er, ah, it's possible, but not definite."

Get those orders in. Compaq does have some inventory to support customers who have standardized on the new history 286-pound Portable II. "We'll accept orders until we use up the inventory," said a spokeswoman.

Keefe is a Computerworld senior editor. PCs and workstations.



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## SQL

CONTINUED FROM PAGE 43

coming in for the \$57 TV and then leaving the store," Berger said. "So we not only paid to advertise the item, but it didn't provide any profit."

On the other hand, the system proved that a bed sheet loss leader effectively led to increased purchases of towels and items from other houseware sections, Berger explained.

Other reports help managers determine which items are sales dogs and which are winners. Such knowledge has an impact on the bottom line, since the

company purchases newspaper space for a half-dozen ads every week, Berger said.

"I can't quantify the savings," Berger said. "But if we're spending the same amount of money on advertising but have stopped advertising items that don't generate profits, the savings are obvious."

Nonmerchandise applications include reports on which stores spend the most for utilities and which are able to economize — "something that was not cost-efficient enough to justify going out and designing permanent Cobol programs," Berger noted.

Home Express was a beta-test site for the system, which was designed by Datawhiz International in Foster City, Calif.

Berger opted to test it after concluding that there was nothing else quite like it being offered at the time. "We took a look around but couldn't find anyone else who was taking data from files like ours, putting it in a relational database and then allowing us to put the results into a spreadsheet," Berger said.

Following a month of debugging, the system was up and running and has been for the past seven months. User training took only a month, since Home Ex-



Home Express' Berger points to savings from use of the SQL Server spreadsheet system

press employed its experience with spreadsheet applications.

Home Express already had a system in place responsible for downloading sales transaction data from store POS systems into Wang Laboratories, Inc. VS 85 and VS 100 machines. The firm added an Intel Corp. 60386-based personal computer to host the SQL Server, and tied it to its 105 Wang terminals and PCs, with 3Com Corp.'s 3+Open LAN Manager-based local area network.

## Next

CONTINUED FROM PAGE 41

and sophisticated audio capabilities. "With Next, you're looking at the future," declared Informix Software, Inc. Marketing Director Doug Edwards. The company's popular Wings graphic spreadsheet will be one of the first important business applications to arrive for the Next machine when it debuts early next year.

Ashton-Tate Corp. and Lotus Development Corp. have presented high-flying but still vaporous development plans for Next. Additionally, IBM said it will license the Nextstep software development environment.

In fact, most of the lofty promises from

developers remain unmet. But this should be steadily changing. A strong lure is Next's 256M-byte optical disc, which will be able to provide up to 200 times the capacity of a floppy disk and more than 10 times the total storage on most hard disks.

With such a large amount of storage, developers will be able to beef up their standard offerings with such capabilities as dictionaries, templates, sample documents and comprehensive help files.

In related news, Next said recently that it plans to offer a network-user version of its computer system with a 40M-byte accelerator drive for \$7,995. In this setup, the optical drive is used as the start-up application and data drive, while the 40M-byte Accelerator drive functions as the "swap" drive.

## Micro 1 issues benchmark challenge

PHOENIX, Ariz. — Micro 1, Inc., a supplier of IBM-compatible Intel Corp. 80386-based computers, has announced the Power/386, which it claims outperforms Compaq Computer Corp.'s Deskpro 386/33 by seven to one based on Micro 1's benchmarking.

"We're inviting users to run their own [between the two machines] and compare," company President Jerry Silbert said. The \$9,500 system is reportedly priced 20% to 30% below competitive offerings. Features of Power/386 include an intelligent 32-bit disk cache controller; 33-MHz operation at 7.5 million instructions per second; a 100M-byte hard disk;

2M bytes of dynamic random-access memory expandable to 32M bytes; 32-bit direct memory access; and support for DOS, OS/2, Unix Version 3.2 and Xenix. In addition, Micro 1 unveiled the 386-16SX. Available now, it costs \$1,495, "less than most [Intel Corp. 80286] systems," claimed marketing director Rick McCabe. The 386-16SX comes standard with 512K of RAM, expandable to 8M bytes, page-mode interleaved memory; zero-wait state; a 1.2M byte 54-inch floppy drive; a 40M-byte hard disk and a 12-in. flat screen monitor. DOS, OS/2, Xenix and Unix System V Version 3.2 are supported.

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Ingres, you'll finally see an alternative to gibberish, vapor and blah. Namely, real information about a more intelligent way to run your business. The Ingres Relational Database System. Stay tuned.

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# NetWare 386 makes it easy



to believe what

**Index**

The first

all bath," said Currid. part of its development is, the product undergoes tests lasting at 2 including United Power, Martin Marietta Corp., a California Edison and State University.

## NetWare 386: The network server platform for the '90s

BY JOHN BARNARDSON

**SAVING FRANCHISORS**—The writing and negotiating are over. Novell has unveiled NetWare 3.11 and 3.12, the company's

MacWire 36C supports up to 256 nodes per circuit, up to 128Kb volume, with 32 global or volume for a total of 320Kb circuit volume.

network, server operating system, by

King said the operating system has been implemented in a modular way, so that users can incrementally add functions to the service platform using server-based applications called the "Web Launchable Modules."

Postman printing services, the LAM  
driver, disk driver, backup, and other  
Postman utilities, including installation, are  
documented on CD-ROM.

"By loading on N.H.A., you actually expand the operating system," King said.

The key to Northwest 306 is its  
continued on page 9

NOVELL

## NEW PRODUCTS

## Systems

Sun Moon Star has introduced an Intel Corp. 80386SX-based machine targeted specifically at small businesses.

A basic configuration of the Sun Moon Star 386SX includes a 16-MHz 80386SX mainboard, 1M byte of random-access memory, a 40M-byte hard disk drive, a 1.2M-byte 5¼-in. floppy drive and a 14-in. screen monitor. The system will be priced from \$2,995, and a three-year warranty is included.

Sun Moon Star  
1941 Ringwood Ave.  
San Jose, Calif. 95131  
408-452-7811

Amdek Corp. has announced price reductions for several of the company's Intel Corp. 80286- and 8086-based personal computer models.

The suggested list price of the 16-MHz 80286-based IBM-compatible Amdek System/286A:16 was reduced from \$2,899 to \$2,399; the price of the 12-MHz System/286A with a single diskette has been dropped from \$2,399 to \$2,199; the 10-MHz 8086-based System/88 dropped from \$1,075 to \$949; and the System/286N 80286-based diskless workstation, formerly priced at \$1,999, is now offered at \$1,799.

The company has also lowered the price of its AM/132 adapter by \$100; the product now carries a suggested list price of \$345.

Amdek  
1901 Zanker Road  
San Jose, Calif. 95112  
408-436-8570

Toshiba America Information Systems, Inc. has announced the T3100E/40, a higher storage capacity version of the Intel Corp. 80286-based T3100E 20M-byte portable personal computer.

The T3100E/40 has a reported access time of 24.4 msec. and includes a standard 1M byte of random-access memory. Other standard features include an internal IBM-compatible half-length expansion slot and a 1.44M-byte, 3½-in. floppy disk drive. A 40M-byte upgrade kit is available for users of the 20M-byte T3100E.

The T3100E/40 carries a suggested retail price of \$4,699.  
Toshiba America  
9740 Irvine Blvd.  
Irvine, Calif. 92718  
714-563-3000

## Macintosh products

Force Communications, Inc. has announced a battery-operated remote keyboard for Apple Computer, Inc. Macintosh computers.

Remote Mouse is reported to allow full control of a Macintosh from distances of up to 50 feet. This includes pointing, clicking, dragging and menu selection.

The Remote Mouse costs \$395.  
Force  
1050 E. Duane Avenue  
Sunnyvale, Calif. 94086  
408-733-5100

SAS Institute, Inc. has announced a statistical visualization tool for the Apple Computer, Inc. Macintosh marketplace.

JMP is interactive spreadsheet soft-

ware that reportedly gives users standard statistical functions in an instant push-button environment for graphical data analysis.

The system fully supports all three measurement levels (interval, ordinal and nominal) both as responses and factors. It is priced at \$695, with volume discounting available.

A 2M-byte memory level is recommended for operation.  
SAS Institute  
SAS Circle  
SAS Circle  
Box 8000  
Cary, N.C. 27512  
919-467-8000

Innovative Systems, Inc. has introduced computer-aided design software specifically developed for the Apple Computer, Inc. Macintosh machine.

Called Precision, the package reportedly offers 2½-dimensional drawing capabilities combined with editable macro files and analysis functions. Geometry tools and global replace symbols are also included. The suggested list price of \$295.

Innovative Systems  
171 Interstate Drive  
W. Springfield, Mass. 01089  
413-737-3993

## Data storage

Alphatronics, Inc. has introduced a 16.2G-byte jukebox configuration for its Inspire

erasable optical storage system for Digital Equipment Corp. and Sun Microsystems, Inc. workstations and IBM Personal Computer AT-based machines.

Jukebox 4 Inspire reportedly includes space for 25 5¼-in. International Standards Organization cartridges, each holding up to 650M bytes of data. Cartridges recorded in a single- or dual-drive Inspire system can be added to the jukebox without modification, Alphatronics said. The 19-by 30-by 21-in. unit fits into standard 19-in. racks or can be enclosed in a stand-alone unit. Pricing starts at \$49,900.  
Alphatronics  
4900 Prospect Drive  
Research Triangle Park,  
N.C. 27709-3687  
919-544-0001

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on your applications to always work, and your investment in software and training will be secure.

Hardware growth isn't so hard either.

Most models of the AS/400 come rack-mounted like a stereo system to give you latitude right from the start.

Dickens Data Systems, Inc. has announced an 8mm cartridge tape subsystem designed for unattended backup of IBM RT disks.

The Dickens Model 8200 helical-scan tape subsystem is capable of storing up to 2.3G bytes of formatted data, the vendor said, and provides backup for 300M-byte and larger RT disks. Peak transfer rates are reported to be 1.5M bytes/sec. with sustained transfers of 256K bytes/sec. The Model 8200 comes with IBM's AIX software drivers to support a variety of formats and is priced at \$6,200. Dickens Data Systems Suite 230 3850 Holcomb Bridge Road Norcross, Ga. 30092 404-448-6177

## Development tools

Easyspec, Inc. has released a computer-aided software engineering tool for IBM Personal Computer AT-class machines running Microsoft Corp.'s Windows software.

Object Plus is said to generate source code in object format for Ada and C and supports the full software development life cycle. The product includes an element dictionary, an object repository, data modeling and import and export facilities. The package costs \$6,700.

Easyspec  
17629 El Camino Real  
Houston, Texas 77058  
713-480-3233

Graphic Software Systems, Inc. has announced character-based versions of the GSS XVT Extensible Virtual Toolkit.

Designed for DOS, OS/2 and AT&T Unix System V programmers, the software reportedly allows character-based applications to provide ease-of-use functions similar to those found in the Micro-soft Corp. Windows environment. The XVT platform is a programming tool for developing C applications that support multiple graphical user interfaces. The character-based versions are priced from \$395 to \$595, depending on operating environment.

Graphic Software Systems  
9590 S.W. Gemini Drive  
Beaverton, Ore. 97005  
503-641-2200

## Software applications packages

Wordperfect Corp. has released Wordperfect 5.0 for the Digital Equipment Corp. VAX/VMS platform.

According to the vendor, the latest version offers more than 45 new features and 75 enhancements to its predecessor, Wordperfect 4.2. The new software contains multiple fonts, leading, kerning, styles and enhanced laser printing capabilities, and text and graphics may be displayed on nongraphics terminals.

Customers with a current software subscription contract can receive the Wordperfect 5.0 upgrade at no cost.

Wordperfect  
1555 N. Technology Way  
Orem, Utah 84057  
801-222-4435

Astral Development Corp. has released Version 2.0 of Picture Publisher, a grayscale image editor that runs under a Microsoft Corp. Windows environment.

Designed for IBM Personal Computers, Personal System/2s and compatibles, the software now reportedly includes support for most popular scanners and frame grabbers, as well as the ability to import bitmaps from the Windows clipboard. The program is priced at \$595 and will be available free to registered users who have purchased a previous version on or before Aug. 1.

Astral Development  
Londonderry Square  
Londonderry, N.H. 03053  
603-432-6800

Xyquest, Inc. has announced its most recent version of the Xywrite word processing package.

According to the company, Xywrite IV incorporates what-you-see-is-what-you-get text, imported graphics and a menu interface. Users will reportedly be able to import scanned images into a document and see the results on-screen.

The package will reportedly be released in the first quarter of 1990 with a list price of \$495.

Xyquest  
44 Manning Road  
Billerica, Mass. 01821  
508-671-0888

Du Pont Information Engineering Associates has announced the release of the first two modules of its Treasury Information Management System (TIMS).

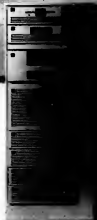
According to the company, the first TIMS module, Bank Relationships and Exposure Management, is designed to monitor a company's overall activities with commercial banks by tracking pre-approved exposure limits with each institution. The second module, Bank Account Administration, manages administrative details of each account with an institution. This includes opening or closing of accounts, changing signatures and authorities, as well as an account directory.

Module three, Bank Compensation Management, is slated to be released in December.

IEA has stated that the price for all three TIMS modules will be approximately \$25,000.

Information Engineering  
Associates  
Memours Suite 9432  
Wilmington, Del. 19896  
800-638-4637

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**NCR**

# NETWORKING

## DATA STREAM

Jeffrey N. Frits

### Treat the disease



Recently, I received a call from Bellcore, which is a research facility, funded by the seven regional holding companies, that plays a key role in telecommunications development. I was extremely pleased to receive the call because it is healthy for the future of Integrated Services Digital Network when processing agencies such as Bellcore request direct input from users.

Acknowledging the myriad differences among various customer-premises equipment vendors' implementations of ISDN, Bellcore wanted to know if users would benefit from a coding system built into an ISDN desk set or terminal adapter. This would allow a user, before setting up ISDN communications with another device, to

Continued on page 63

#### Inside

- Underground: Best links up with Mac LANS. Page 58.
- Compuserve, Prodigy offer "earthquake forum" bulletin board service. Page 62.
- IBM, DEC join OSI. Page 62.

## Sky is limit for Nissan's Infiniti

### ON SITE

BY ELLIS BOOKER  
ON SITE

CARSON, Calif. — There's no car in Nissan Motor Corp.'s television commercials for Infiniti, its new luxury sedan. Instead, you watch serene pictures of the tide lapping against an empty beach or a flock of distant birds in flight.

While its ad campaign may be unconventional, Nissan's choice of a satellite-based network for its Infiniti Division dealerships — some 40 to 50 of which will go on-line when the Infiniti debuts Nov. 8 — is in step with the rest of the automotive industry. Ac-

cording to analysts, car makers account for 29% of the very small-aperture terminal (VSAT) market today.

The VSAT network, which will connect the Infiniti dealers with Nissan's corporate headquarters, will be cheaper than services offered by conventional long-distance companies' value-added networks. But the real attraction of VSATs is their flexibility, according to Mike Hadfield, Nissan's network data processing specialist.

"The Infiniti Division literally doesn't know where the 200 dealerships we hope to have within the next two or three years will be located," Hadfield said. Because of this, a terrestri-

al network may have to be totally reengineered after two years. "But with a VSAT, you just put the dish in and then you move pie in the sky," he said.

To start, Nissan will spend around \$2 million on the network, which is being deployed by Scientific-Atlanta, Inc., which won the contract in May. The car maker has purchased one 56K bit/sec. inbound and one 56K bit/sec. outbound circuit through the Ku-band geosynchronous SBS 4 satellite operated by Hughes Network Systems, Inc. in Germantown, Md.

Each dealership will have a 1.8-meter satellite dish connected to an on-site IBM Application System/400 computer. A data processing unit (DPU) between the satellite dish and the processor will act as the X.25 packet assembler/disassembler, as well as handle protocol conversion. Using Synchronous Data Link Control over the satellite-based X.25 packet network, the AS/400s will link to an IBM 3090 Model 500 mainframe running MVS/XA in Nissan's Culver City, Calif., headquarters.

Applications available to Infiniti dealers will include:

- Sales prospect processing.
- On-line warranty processing.
- A vehicle locator to speed ordering of cars.
- On-line vehicle service histories.

Each site will have 15 to 20 personal computer users connected to the AS/400. However, mechanics working on cars in the service bays will use more rugged terminals to connect to

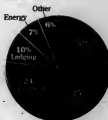
the on-site processor.

The 3090 was upgraded from a three-processor Model 300 to handle the VSAT network, as were the front-end processors on this host. Nissan exchanged the IBM 3725 communications controller for a 3745 to accommodate a "doubling of the Nissan network" over the next couple

### The big three

The VSAT market holds a heavy vertical focus. Seventy-seven percent of the VSATs purchased have been from the auto, retail and financial industries.

DISTRIBUTION OF VSATS PURCHASED BY INDUSTRY



SOURCE: COMPTON ELECTRONICS CO. (DATA FROM CUSTOMERS)

of years, according to Hadfield.

The VSAT network will be interfaced with Nissan's existing communications software, including IBM's VTAM, Network Control Program and Network Performance Monitor.

That existing network already supports 1,100 Nissan dealers linked using McDonnell Douglas Network Systems Co.'s Tymnet packet network or 800 dial-in lines. There has been no decision about using VSATs for these dealerships, Hadfield said.

Continued on page 59

## 3Com sees the light, adds SNMP support

BY PATRICIA KEEFE  
ON SITE

SANTA CLARA, Calif. — Plans to enhance 3Com Corp.'s Inter-network Bridges (IB) family catch the vendor doing an abrupt about-face as it caves in to mounting support for the network management protocol Simple Network Management Protocol (SNMP).

3Com said it will make support available for two network management protocols under its IB line next spring: SNMP and the Common Management Information Protocols (CMOT).

which it has championed. In addition, the routing bridges will also be network-bootable to enable a network administrator to easily upgrade and maintain network software.

The enhanced bridges will be demonstrated this week at the vendor's second annual Network Systems Forum in San Jose, Calif., where 3Com will outline its network management architecture and strategy.

Chalk up the decision to support both protocols to being realistic about where the market is right now, said George Marshall, 3Com's president.

Continued on page 59

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## Ungermann-Bass targets Apple, FDDI with networking capabilities

BY ELISABETH HORWITT  
CW STAFF

SANTA CLARA, Calif. — Ungermann-Bass, Inc. has expanded the networking versatility of its Acces/One networking platform with links to Apple Computer, Inc. Macintoshes and AppleLink local-area networks, as well as to Fiber Distributed Data Interface backbones.

However, the company would give no definite time frame for when it plans to support several other strategic network-

ing environments that rival firms have already begun incorporating into their systems. Ungermann-Bass has backed off from two environments for which it had announced support in the past — Open Systems Interconnect (OSI) and IBM's Netview.

The vendor was in fact in the vanguard of companies that announced an intention to support IBM's Netview through the Netview/PC interface. However, Ungermann-Bass quietly discontinued its efforts to develop an interface between its Ac-

ces/One Manager and the IBM Personal Computer-based system. Instead, it became one of seven vendors to announce support for the OS/2 Extended Edition version of Netview/PC, when IBM announced the interface more than a year ago.

### Waning demand

However, an actual product may take some time to arrive. Ungermann-Bass Vice-President of Marketing and Sales Michael Gardiner stated that user demand for Netview/PC support, initially strong, has dropped off of late.

In contrast, Gardiner admitted that user demand exists for the Simple Network Management Protocol (SNMP) for managing Transmission Control Proto-

col/Internet Protocol (TCP/IP) networks but still would give no time frame for when Acces/One Manager will support the de facto standard. This puts Ungermann-Bass behind many of its rivals, which have jumped on the SNMP bandwagon in the last few months (see story page 55).

Lack of demand was the reason Gardiner gave for Ungermann-Bass' decision not to announce any more OSI-based products, at least for the short term. The vendor made an early — reportedly too early — foray into the OSI-Manufacturing Automation Protocol market, through its former subsidiary, Industrial Networking, Inc. (INI).

Ungermann-Bass retains INI's "core OSI technology" and is participating in the OSI arena by sitting on standards bodies and taking part in demonstrations such as the recent OSI-Netbios demonstration at the Interop '89 show, Gardiner said.

However, the vendor is "waiting for OSI to mature" before it reenters the market, he added.

Key among Ungermann-Bass' recent product announcements was Maxtalk, a hardware and software module that is said to connect up to 16 Apple LocalTalk devices, or 16 daisy-chained LocalTalk networks, over an Ethernet or Token-Ring backbone. The product is said to use filtering and routing techniques to decrease

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**T**HUS, WHILE conventional LocalTalk networks divide up a single 230.4K bit/sec. channel among multiple users, Maxtalk is said to provide as much as 230.4K bit/sec. per user, depending on traffic configurations.

overall network traffic, and therefore significantly increase bandwidth available to individual devices.

Thus, while conventional LocalTalk networks divide up a single 230.4K bit/sec. channel among multiple users, Maxtalk is said to provide as much as 230.4K bit/sec. per user, depending on traffic configurations.

Maxtalk is said to support Apple's AppleTalk networking protocols. Optional MacWUS software is said to enable Macintosh users to communicate via TCP/IP protocols. It is said to allow Macintoshes to access a high-speed backbone supporting up to 10M bit/sec. without the need to equip each device with a Token-Ring or Ethernet board.

Maxtalk is priced at \$4,695; MacWUS software at \$350 per license. Initial shipments are scheduled to start within 90 days.

Ungermann-Bass also announced FDDI Superlan bridges, which are said to interconnect IEEE 802.3 Ethernet and IBM Token-Ring LANs across an FDDI-compatible fiber-optic backbone that supports speeds of up to 100M bit/sec. The Token-Ring FDDI bridge is said to support IBM-compatible source-routing functions. Bridge pricing is said to start at \$3,950.

All of the above products can be managed by Ungermann-Bass's Acces/One Manager, the vendor said.

# Infiniti

CONTINUED FROM PAGE 55

Although data applications will be the primary job of the VSATs and voice traffic will be handled by terrestrial facilities, Nissan has considered using the satellite dishes to pull down broadcast video signals. For example, Nissan's dealers could use their VSATs to view shows on the Automated Satellite Television Network (ASTN), an independent supplier of video programming for car dealers.

The network will support batch and interactive computer communications.

"We liked that we could buy 56K bit/sec. circuits," said Hadfield, who said other vendors offered inbound circuits at

128K bit/sec. increments and outbound circuits of 512K bit/sec.

In addition, Hadfield said Scientific-Atlanta's network management system was attractive because it allows him to monitor and control resources on his own "virtual network," without having to deal with other Skylink.25 users who may share the same earth station hub.

Howard Hecht, a senior research analyst, enterprise network strategies at Gartner Group, Inc. in Stamford, Conn., believes VSAT technology is moving fast.

"You can't assume VSATs will be the same five years from now," he said. Terminals will evolve, becoming "smaller and easier to use," while the bandwidth will increase. Gartner Group believes the next step will be T1 services.

# 3Com

CONTINUED FROM PAGE 55

3Com's marketing manager of network management. "We took our best shot last year at trying to convince the industry to use [only] one protocol. But it didn't work out that way."

3Com views SNMP as a very streamlined, simple protocol with a strong Transmission Control Protocol/Internet Protocol focus. It uses some of the same encoding technology found under Open Systems Interconnect. "It has a place," Marshall said.

This is not to say that 3Com is turning its back on the SNMP's rival — CMIP. That is not the case at all.

Users of 3Com's IB family can have their cake and eat it too. Not only will the enhanced IB line support whichever network management protocol gets the nod, but it will also link 3Com networks running both protocols, Marshall said.

Users on 3+Open will be better able to employ a wide variety of management tools to integrate and manage mixed vendor networks, Marshall said.

"A serious network management system today has to support several network protocols, so we're saying, 'Let's quit fighting.'"

The network boot capability maintains all IB software configuration data on a 3Com Network Control Server, allowing managers to troubleshoot nets and devices from a single point on the LAN.

# VSAT mini

Analysts say to watch for a distinctive cousin of very small-aperture terminal (VSAT) technology called mobile satellite terminal.

Not only are these mobile dishes smaller — 6 to 8 inches compared with a VSAT's usual 1.8-meter dish — they're cheaper, too.

According to John Pemberton, program director of strategies and telecommunications services at Gartner Group, Inc. in Stamford, Conn., mobile terminals will cost \$4,000, compared with a VSAT's \$50,000 price tag.

"They're for message traffic, not for video or bulk data," said Pemberton, adding that the technology, which uses the 1- to 2-GHz frequency range, is much less susceptible to weather interference. Besides, he notes, mobile dishes let users go mobile and open the possibility of expanding electronic data exchange (EDI) to polytechnic field managers in current practice.

Pemberton predicts the market for mobile stations hardware and services will exceed \$6 billion by 1994. However, a good deal of that cost will be building and thus hampering the L-band geosynchronous solution that the mobile terminals use.

One mobile satellite vendor, Geostar Corp. in Washington, D.C., said that it will shortly announce a joint marketing agreement with IBM to use IBM's Information Network as a value-added component of its satellite radio-determination system.

Geostar customers, who offer the miniature satellite terminals to trucks, trains and planes, use the service to locate and send messages to their mobile units. Under the IBM accord, this message and telemetry data will be passed from Geostar's main earth station hub into the IBM Information Network. Value-added services, such as electronic mailboxes and EDI formats, are planned, according to a Geostar spokesman.

ELLIS BOOKER



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standing the

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everything works

**"IT'S ABOUT  
SOMEBODY  
WORKING**



**UT TIME  
GOT IT ALL  
TOGETHER."**

## On-line information services become lifelines after quake

BY JOANIE M. WICKLER  
CW STAFF

Times of crisis have a way of igniting a spirit of harmony among people. In the aftermath of this month's devastating earthquake, that feeling transcended the debris-strewn San Francisco Bay Area and spilled over to the rest of the nation, where many subscribers to on-line information services turned to their computers to help the less fortunate.

Subscribers to bulletin board services provided by CompuServe, Inc. and Prodigy Services Co. volunteered their services when they learned that many Bay Area residents could not access long-distance lines to get in touch with relatives and friends in other parts of the country.

Those in the disaster-affected area were directed to message the bulletin boards with the names and phone numbers of the individuals they needed to contact. Subscribers in the appropriate cities

then telephoned to relay "I'm OK" messages from the San Francisco area.

CompuServe, a 545,000-member service, set up a special "earthquake forum" bulletin board to provide information on where to receive or donate relief supplies, help people locate one another and update the status of communications and transportation systems in the area. That forum handled 500 messages within a 24-hour period.

Some CompuServe nodes were damaged, but the company made a special WATS number available so that subscribers could still use the service, according to spokeswoman Jen Bowers.

Bowers said that most of the problems users experienced with the service were because of electricity outages.

Prodigy, a 100,000-member service, also experienced some temporary outages, according to communications manager Brian Ek, who said that the damaged nodes were restored by Wednesday morning. Ek added that Prodigy set up special earthquake bulletin boards two hours after the disaster and reported 500 postings in the first five hours, which he said was "a phenomenal geometric jump in usage."

Both Bowers and Ek commented that computers are starting to assume a similar role to the one ham radio operators play in times of natural disasters. "Now," Ek said, "anyone with a computer who is hooked up to an on-line service can go in and actually interact with people in the hit areas."

## IBM, DEC throw weight behind network forum

BY ELESABETH HORWITT  
CW STAFF

TORONTO — IBM and Digital Equipment Corp. finally joined the Open Systems Interconnect/Network Management Forum as voting members earlier this month, officially blessing the body's efforts to accelerate the development of an implementable network management standard.

For several months, both vendors had demanded that the forum perform two tasks before they would consider becoming members: change bylaws that awarded the standards body the intellectual property rights to whatever specifications are proposed by its members, and coordinate the forum's work with that of other standards bodies, such as the Corporation for Open Systems and the European organization SPAG.

DEC was primarily concerned with potential technical and legal obstacles to releasing its own technology for use in other product areas, according to David Korf, DEC's multivendor interconnect marketing manager. By joining the Forum, DEC has committed to implementing the specifications the organization developed for ensuring interoperability among different vendors' network management systems, Korf said. However, the forum's OSI specifications will constitute one of many access modules that will provide DEC's Enterprise Management Architecture with connections to a variety of standards-based and proprietary networking systems, he added. On the second issue, Korf said, "We don't want to duplicate efforts, since we only have a certain amount of resources."

IBM is likely to incorporate the forum's version of OSI Common Management Information Protocol and Common Management Information Services into the IBM OSI/Communications Subsystem. Announced last January, the product is said to enable non-IBM, OSI-compliant networking systems to communicate with IBM's NetView.

Also last week, the Forum announced that nine companies had joined as associate members since last June, bringing membership to 15 voting members and 60 associate members.

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# UN

# Fritz

CONTINUED FROM PAGE 55

query that device on exactly how it communicates over a network, obtaining information such as B channel rate adaptation, the type of switch generic supported, channel configurations and so on. The idea is that, in lieu of complete standards that would ensure interoperability, the user would at least have some idea of how to set up communications with another ISDN device.

Bellcore's effort, while laudable, is addressing the symptom and ignoring the disease. The disease, of course, is the lack of standards among different ISDN vendors' equipment. Cross-vendor com-

patibility is critical to ISDN's success in today's "show me" marketplace. ISDN, most accurately defined as a set of standards for telecommunications, has been hampered by some major unstandardized technologies. Ironically, standardization, at least on a national level, has been a hallmark of telephone communications for years. Consistent standards would make much of Bellcore's proposed querying system unnecessary in the first place.

While several areas of ISDN technology need standardization, nowhere is the need for standards more critical than B channel rate adaptation. ISDN B channels run at 64K bit/sec. However, some devices may require lower rates, such as 19.2K bit/sec. Rate adaptation tech-

niques, which provide the means of adapting the B channel to the slower rates, are frequently vendor-proprietary. Thus both sides of the B channel link must use equipment with the exact same rate adaptation scheme.

That is fine in some environments. However, B channel applications tend to operate in a circuit-switched mode, where data calls can be made to a variety of destinations. Offering wide connectivity and then limiting access to restricted equipment is ludicrous. It nearly invalidates the advantages of circuit-switched data. Yet neither the Consultative Committee for International Telephony and Telegraphy (CCITT) nor Bellcore has taken a strong stand for adopting B channel rate adaptation standards.

Clearly, there is a need for a packetizing organization to lead the way in inter-vendor standards. As a user, I should be relieved of any concern about which rate adaptation scheme my equipment uses. Until standards are universally adopted, however, I need to know in order to communicate with other users.

Consider the case of West Virginia University's ISDN implementation. The telecommunications department employs Tetrat desk sets because they uniquely provide 64K bit/sec. connectivity and two data ports. Recently, the vice-president of academic affairs purchased a Fujitsu desk set because it supports the 19.2K bit/sec. asynchronous access that his office needs for a LAN link.

How am I going to recover the inevitable question from the vice-president as to why he can't use his B channel for asynchronous communications to telecommunications?

I say that he can't communicate because the ISDN devices are from different vendors, he will respond. "But I thought ISDN provided an integrated network on campus."

"It does," I'll reply. "But lack of standards cuts off the network integration at your desk set." He won't be pleased. It's not that it's wrong for different vendors' equipment to provide different features — features that may make or break a sale. Yet we need a common denominator for ISDN data communica-

**B**ELLCORE'S effort, while laudable, is addressing the symptom and ignoring the disease. The disease, of course, is the lack of standards among different ISDN vendors' equipment.

tions, and vendor partiality must not stand in the way. Bellcore acknowledges that the lack of standards is limiting the growth of ISDN. Therefore, why doesn't it use its considerable influence to pressure vendors toward these standards, rather than sitting on the sidelines and waiting? After all, nobody stands to gain more from the widespread acceptance of ISDN than do the BOCs who will be selling the lion's share of the ISDN services.

My kids have a favorite rhyme. It goes something like this:  
"You stole the cookies from the cookie jar."

"Who me?"  
"Yes you!"  
"Couldn't I be?"  
"Then who?"

It's corny, but it does apply to the ISDN standards issue. Who will provide guidance for the ISDN standards? If not Bellcore, then what? Certainly not the FCC. The CCITT? Could be — but will it be in our lifetime?

I am told, "Don't be an alarmist. Given time things will settle out."

Maybe so, but don't tell that to the proponents of quad stereo, which suffered a premature death because of lack of standards.

Fritz is a data communications analyst at West Virginia University in Morgantown.

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## NEW PRODUCTS

## Local-area networking hardware

Belkin Components, Inc. has extended its line of IBM Token-Ring products with a multistation access unit that reportedly complies with IBM Token-Ring and IEEE 802.5 standards and requires no external power supply.

Each Multistation Access Unit (MAU) allows up to eight workstations to operate on the network and can also be interconnected with other MAUs to form larger networks that will support up to 260 workstations, the company said.

The unit reportedly functions at both 16M bit/sec. and 4M bit/sec. rates. The price is listed at \$495.  
Belkin Components  
14550 S. Main St.  
Gardena, Calif. 90248  
213-515-7585

Users of Sincor Corp.'s LAN One line of local-area network equipment can now connect to Apple Computer, Inc.'s AppleTalk network environment.

According to the vendor, the fiber-optic AppleTalk module, converter and extender package will enable users to connect departmentalized AppleTalk

networks to either a fiber-optic AppleTalk backbone or a higher speed Ethernet or Token-Ring backbone.

The module costs \$389, and the converter and extender are priced at \$285 each.  
Sincor  
P.O. Box 13625  
Research Triangle Park, N.C.  
27709  
800-888-5261

## Network management

Hughes Lan Systems, a subsidiary of Hughes Aircraft Co., has announced a network management center with Simple Network Management Protocol implementation.

The 9100 Network Management Center reportedly provides comprehensive alarm reporting and handling functions, including alarm logging, audio and visual alerts and solution recommendation capabilities. It also reports on network device performance and logs key statistics, the company said. Software pricing is set at \$14,000 per unit.

Hughes Lan Systems  
1225 Charleston Road  
Mountain View, Calif. 94043  
415-966-7300

Fujitsu America, Inc. has enhanced its FMS 1000 network management system, which was originally designed for use in small modern networks.

Remview, a combination software and hardware function, reportedly enables the network operator to remotely monitor the FMS 1000 in real time.

The remote operator can also send and receive messages to the local operator via the network management system, the company said. Remview costs \$1,295.

Fujitsu  
3055 Orchard Drive  
San Jose, Calif. 95134  
408-432-1300

## Links

Interactive System Corp. has announced its OSI/TCP Application Facility.

According to the company, the device permits Open Systems Interconnect upper-level protocol applications, such as file access transfer management and X.400, to operate without modification over AT&T Unix System V Release 3 STREAMS-based Transmission Control Protocol/Internet Protocol networks.

The product will be available for licensing in portable source-code form, as well as binary for Intel Corp. 80386-based systems. Shipments are scheduled for first-quarter 1990.

Interactive Systems  
2410 Colorado Ave.  
Santa Monica, Calif. 90404  
800-346-7111

Suncoast Systems, Inc. has announced a two-way telephone-to-computer voice digitizer and phone control product.

Called Computerphone, the peripheral is able to accept, digitize, store and transfer incoming speech, the vendor said. The product also can reportedly answer incoming phone calls and convert incoming tones to standard ASCII characters for processing. The unit is priced at \$695.

Suncoast Systems  
P.O. Box 7105  
Pensacola, Fla. 32514  
904-478-6477

## Diagnostic equipment

International Data Sciences, Inc. has announced an intelligent Token-Ring Medium-Access Unit (MAU) which allows a local-area network manager to isolate and repair most Token-Ring faults by using any remotely located personal computer.

The product comprises three modules, and each MAU is contained in a 7-by 9-in. rack, the company said.

Each proprietary MAU can reportedly be implemented for less than \$500 per node.

International Data Sciences  
7 Wellington Road  
Lincoln, R.I. 02865  
800-437-3282

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# MANAGER'S JOURNAL

## EXECUTIVE TRACK



**Mike Hattery** has been appointed vice-president of information services at Adelphi Coors Co. in Golden, Colo.

Hattery is responsible for planning, control, development, implementation, support and operations of both IS and telecommunications. He was formerly director of IS at Ralston Purina Co. in St. Louis.

Hattery holds a bachelor's degree in mathematics/physics from Western Illinois University in Macomb, Ill., and a master's degree in business administration/finance from Xavier University in Cincinnati.

Steve Adamson has been named acting executive director of the Association for Systems Management (ASM) in Cleveland.

He replaces David Sturteness, who resigned earlier this year. The ASM executive committee is currently searching for a permanent executive director.

Adamson is an independent management consultant based in Fullerton, Calif. His 20-year IS career includes positions at Bank of New England; Pet, Inc.; Mars, Inc.; California Federal Bank and consulting work at Coopers & Lybrand.

Adamson was international president of ASM in 1987-1988. He was previously international secretary, vice-president, president-elect and an international director. He has been active in the Orange County, Calif., ASM chapter for 20 years.

### Who's on the go?

**Changing jobs:** Promoting an assistant? Your peers want to know who is coming and going, and *Computerworld* wants to help by mentioning any IS job changes in Executive Track. When you have news about staff changes, be sure to drop a note and photo to or have your public relations department write to: *Clint Wiles*, Senior Editor, Management, *Computerworld*, Box 9171, 375 Commonwealth Road, Framingham, Mass. 01701-9171.

## Freeing the retail python

*Mervyn's EDI implementation has improved inventory turnarounds, order cycles*

BY CHARLES VON SIMSON  
OF STAFF

**D**ennis Connors is charged with the dicey job of pulling a pig out of a python.

Connors is the vice-president of MIS at Mervyn's, the Hayward, Calif.-based apparel and soft-goods retail chain subsidiary of Dayton-Hudson Stores, Inc. The python is the retail product chain from vendors to distribution centers to retail outlets and out to customers. The pig is the buildup and shortage of inventory at different parts of the sales cycle.

The problem for Mervyn's was maximizing turns of inventory while ensuring that stores were fully stocked with fast-selling items at all times. In the highly competitive retail segment in which Mervyn's battles with the likes of K Mart Corp. and J. C. Penney Co. if customers do not find what they want, it is easy to head down the street to the competition.

"Mervyn's is in a fashion business. Their products have a rapidly diminishing life cycle," says Theodore Grossman, a professor of information systems and a specialist in retail technology at Babson College in Wellesley, Mass. Grossman explains that the average fashion item has a life cycle of four to six weeks, compared with 13 weeks a decade ago. Responding to rapidly changing demand is a critical competitive area.

Several years ago, Mervyn's store managers were told that performance would be measured by turns of store in-



Mervyn's Connors has racked up performance gains

ventory 13 times per year, once every month and one additional time. "Being as sharp as they are, they would sell completely through the first turn of the month as quickly as possible," Connors says. "The logistics couldn't handle it."

The pig wedged firmly in the python was a stomachache for Mervyn's management. The company's fortunes

lagged for several years after its acquisition by Dayton-Hudson Stores, until a turnaround effort began in late 1986. By the middle of 1989, Mervyn's posted a 13% sales gain at stores that were open more than 12 months.

However, two things had to happen together at Mervyn's to help boost profits while turning over merchandise.

*Continued on page 68*

## Ciba-Geigy prescribes a business/IS mix

BY JOSEPH MAGLITTA  
OF STAFF

**W**hile many organizations give lip service to getting top information systems managers more involved in key business activities, Ciba-Geigy Corp. has done just that.

Last year, the Swiss-owned pharmaceutical and chemical firm began setting up IS groups within key divisions such as research, development, manufacturing and marketing. At the same time, the company retains a centralized IS department to handle traditional "back office" activities for the 4,500-employee operation.

Company officials say the two-pronged approach lets Ciba-Geigy apply IS power exactly where it is needed. Each department, they say, has the freedom to develop its own IS functions.



"It's a hybrid structure," explains Jack Feeley, director of marketing IS at the pharmaceutical division in Summit, N.J. "It's not one pole or the other, all centralized or all departmental. It's a mixture of both."

A 25-year IS veteran, Feeley occupies what is probably the hottest of the new departmental IS positions. Feeley, former divisional director of end-user support, assumed his new position last December.

He directs a 40-person staff and reports to the marketing director, who in turn reports to a senior vice-president of marketing.

Feeley's IS group is responsible for purchasing all syndicated data, building databases and all other applications for marketing.

The department has already played a major role in a strategic project, Feeley says, citing the automation of the 1,400-member field sales force. The project equipped the sales force with

laptop computers for their "office on wheels."

A willingness to experiment with new organizational structures has allowed the firm to stay competitive with formidable rivals such as Eli Lilly & Co., Merck & Co., Johnson & Johnson and Warner-Lambert Co., although cutting-edge technology is not by itself a competitive edge.

"Sooner or later [competitors] all get the same technology and the competitive edge disappears," Feeley told attendees at the Info '89 conference in New York earlier this month. "Then you've got to move onto another area."

Feeley says that placing top IS people in the front lines also provides a new, exciting career path for seasoned IS employees who might otherwise become bored with more traditional placements. Successful as the move has been, Feeley cautions that the idea may not work as well in every company. "It depends on the culture of the organization," he says.

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## Retailing

CONTINUED FROM PAGE 65

dies. The first was a new technology — electronic data interchange (EDI). The introduction of EDI in February 1987 immediately led to an increase in annual inventory turns of three to four times.

The second was a re-evaluation of the measures of different parts of the business — and an ensuing effort to make them more compatible.

"The inefficiencies of distribution can become a self-fulfilling prophecy," Connors points out. "Trucks don't move unless they are 90% full, so the stores were not selling their merchandise, because they were not getting it in time to meet seasonal or promotion-driven demand."

The technical challenge was to tie the entire chain — vendors, distribution centers, in-store point of sale, store buyers — using EDI. Each store has an IBM minicomputer which will soon be shifted to a Unix platform for added flexibility in making disparate environments. Electronic communication replaced telephone tag, paper manifests and other unwieldy methods of transmitting information on what merchandise was selling fast and what was languishing on shelves.

Retail chains compete not just for customers but also for high-demand merchandise as well. "Basic supply is limited, you have to get as much information on test markets as quickly as you can, and then order a hot item while vendors still have it," Grossman says. "You have to dump the losers and stock the winners as quickly as possible."

The value of better sales data to Mervyn's suppliers cannot be overestimated, Connors says. "If you give information back to the vendor on what's selling, be can leverage that back to his suppliers,"

he says. "From a national perspective, with 1992 looming, it is clear that we have to enhance that process. Too few people understand the value chain."

The technological implementation proved to be the easy piece of the distribution equation. The more complex organizational response was to break down traditional efficiency measures and concentrate on moving the most profitable items. The simple nature of the changes belied the discipline necessary to attain them when managers and employees had grown so accustomed to the traditional measures.

"Sometimes we simply have to send the trucks 40% full," Connors says. "It looks like you are not using the trucks most efficiently, but you are getting

goods to the customers. You have to look at the whole business as a set of congruent goals."

The critical result of improved inventory management is to add flexibility to store sales. Before implementing EDI, Mervyn's had a 10-week order cycle, meaning that it took 10 weeks between distribution center visits to get to a retailer. That meant that the distribution centers could only make five adjustments to stock per year. During those five adjustments, they had to make predictions on order patterns for the entire 52 weeks of the year. If red sweaters were a dog, they would sit on Mervyn's shelves while customers went elsewhere for the green sweaters that were all the rage.

"With EDI we have pushed that back

to five-week cycles," Connors says. "We get to look at the stock 10 times per year. It is still not great, but it is better. We are pushing for a one-week cycle; we want to look at it 52 times per year."

Costs, of course, are another important measure, and with shorter cycles inventory costs go way down. "With a five- to 10-week cycle we have to hold [inventory] a lot longer, and that is expensive," Connors says.

The best inventory management retail chains, such as The Limited Stores, Inc., hold most stock less than 24 hours. "Their Columbus, Ohio, distribution center is truly a distribution center," Grossman says. "It is not a warehouse because things don't stay there. That is where the game is won and lost."

## CALENDAR

NOV. 3-10

**American Association of Equipment Lessors Conference.** San Francisco, Nov. 5-8 — Contact: American Association of Equipment Lessors, Suite 1018, 1300 N. 17th St., Arlington, Va. 22208.

**Computer Applications in Medical Care Symposium.** Washington, D.C., Nov. 5-8 — Contact: SEACME (Office of Continuing Medical Education), The George Washington University Medical Center, 2200 K St. N.W., Washington, D.C. 20037.

**Handling Apple Computers in Information Systems Conference.** Dallas, Nov. 5-8 — Contact: MacSci, Suite 606, 111 E. Wacker Drive, Chicago, Ill. 60601.

**Oracle 7.5.** Los Angeles, Nov. 5-10 — Contact: Gate Resources, Suite 606, 111 E. Wacker Drive, Chicago, Ill. 60601.

**Product Support and Executive Information Systems: A Managerial Perspective.** Cambridge, Mass., Nov. 6-7 — Contact: Decision Support Technology, 125 Cambridge Park Drive, Cambridge, Mass. 02140.

**The Executive Forum on Information Systems Management.** Cherrington Beach, Pa., Nov. 6-8 — Contact: 135 W. 100th St., New York, N.Y. 10019.

**Managing '89.** New York, Nov. 6-8 — Contact: Information Publishing Corp., P.O. Box 4375, Houston, Texas 77243.

**On-Line Information Processing Symposium.** New York, Nov. 6-8 — Contact: JAI Consulting, 4 Wacker St., Anderson, Mass. 02130.

**The Three S's of Software Automation: Scheduling, Synchronization, Synchronicity.** New York, Nov. 6-8 — Contact: CAP Management, Suite 402, 272 W. 42nd St., New York, N.Y. 10018.

(A) WY-3225, 25 MHz, 386 as multi-user platform driving (B) WY-60 terminal, (C) WY-150 terminal and (D) WY-370 color terminal. (E) WY-3225 as LAN fileserver with (F) WY-2116 16 MHz 286 with WY-650 VGA color monitor, (G) WY-2112 12.5 MHz 286 with WY-700 hi res mon, (H) the Wyse Networker and (I) WY-3236 16 MHz, 386 with (J) WY-7190 hi res 19" monitor.

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## BOOK REVIEW

## A call to rediscover U.S. ingenuity and learn from competitors

### THE SILENT WAR

By Ira Magaziner and Mark Patinkin  
Random House, \$19.95

Despite illusions of prosperity, America's industrial and technological base — the source of our world leadership — is eroding, and companies too often are turning over the manufacturing to countries able to produce things better and cheaper.

In *The Silent War*, Ira Magaziner draws on 15 years of experience as an international business strategy consultant to explore the strategies behind successful companies. Journalist Mark Patinkin clearly was along to handle the writing chores, since the book is written from Magaziner's point of view. The book is set up case-study style, with each of the nine chapters devoted to a corporate triumph, whether overseas or in the U.S.

Many of Magaziner's observations are not new; the decline in U.S. industrial strength and the increasing capacity of foreign countries to outmanufacture the U.S. at a lower cost is a well-worn topic. But Magaziner's ability to make the people and projects come alive separates this book from many other treatments.

Each chapter is a tale of triumph and of the personal, corporate and even national determination to produce the best product, from refrigerators to jet airplanes, in the face of formidable obstacles. The heroes are the engineers — like Samsung's Yun Soo Chu, who designed the microwave ovens that catapulted Samsung to world leadership in microwave sales — and the visionaries, like Charles Lucy of Corning Glass, who saw fiber optics' potential before much of the world did.

These stories share common themes: the vision of someone who committed resources for investments in technology,

training and factories, often when a payoff was not expected for years.

Unfortunately, the foreign triumphs outweigh those in the U.S. All too often, U.S. business is driven by a short-term outlook, and firms frightened enough to invest heavily in research and development at the expense of lowered short-term profits become the target of takeover. But the U.S. can fight back, Magaziner says, by capitalizing on what has always been its strength — innovation — and by adopting some of the business models pioneered by our foreign competitors.

Magaziner advocates a new role for government, that partner with business. While the U.S. government spends billions on defense-related research, there is little emphasis on the commercialization of products. In contrast, foreign governments have taken on a strategic planning role, targeting important industries and working with business to nurture them.

Another point the authors bring home is the investment many countries make in their work force, empowering their hourly workers with the skills and motivation to achieve. Take Singapore, for instance. A tiny country with few natural resources, its government has decided that its people are the key to its success and has set up an extensive training network. These days, advanced technologies often require a lead time of a decade and millions of dollars in R&D before a technology reaches commercialization. The authors argue that companies can no longer do it alone. The scale of investment requires new ways of doing business; ways in which many other countries are already operating. One example is the European Airbus consortium, a venture initiated by the French, West German and British governments to build commercial jets. This pooling of resources enabled Airbus to penetrate and become competitive in an industry in which a single country or company might not.

If the U.S. is to be a player in emerging industries, the authors argue that it must adapt some of these foreign models to its way of doing business. They point to examples of encouragement, such as the U.S. government-business joint venture in and the increasing awareness on the part of U.S. business executives to admit the challenge from foreign competition.

The battle lies ahead. Again and again, Magaziner recounts experiences in which he tried to persuade American business executives of imminent dangers, only to have the warnings fall on deaf ears.

Despite a fair amount of putting himself on the back for recognizing these truths when others could not, Magaziner manages to avoid sounding arrogant. And having worked with some of the world's largest companies, the author does have some valuable lessons to convey.

The lessons are driven home with style. As each tale unfolds, you may find yourself wanting to cheer when Chu's assembly line cranks out its first microwave or when General Electric engineers complete the job that others said couldn't, and shouldn't, be done. Magaziner's insights are timely, relevant and recommended reading.

AMY CORTESE

Cortese is Computerworld's Mid-Atlantic correspondent.

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COMPUTERWORLD

## Top 10

FROM PAGE 1

faculty is led by Sloan School of Management MIS group Chair Stuart E. Madnick, who has a background in computer science and who is working on improving the semantics of data. The director of the Center for IS Research is John Rockart, who pioneered the concept of "critical success factors."

Another prominent member is John Henderson, who is breaking ground in the area of the strategic alignment of IS and business functions. Randall Davis, associate director of the MIT AI Laboratory, is also on the IS faculty. A new Center for Coordination Research, headed by Tom Malone, who holds a Ph.D. in psychology, is the first technology research program formed around both organizational and group interaction.

"We provide students with a depth of technical knowledge so they know what they're talking about," Madnick says. They also have a sense of how technology fits into the organization and where the business is trying to go.

The Cambridge, Mass., school received the highest marks (ranking 8.68 overall out of a possible 10 points) for the ability to place students in high-level IS positions and for the quality of its research programs (ranking 8.65 out of 10). MIT's prominent graduates include Citicorp's chairman John S. Reed.

"MIT has been known for its technology and its management training, but not really for IS. But now as technology is changing the way business operates, you can no longer draw a clear

retical teaching.

The program's 18 faculty members also work as consultants in IS. "Our faculty's strength is that they are doing professionally what they are teaching in the classroom," says James A. Senn, chair of the Computer Information Systems Program.



MIT Sloan School of Management's Madnick

Rated first by the survey respondents for partnerships with businesses (scoring 8.48), Georgia State, in Atlanta, works closely with local companies.

"We have people in our courses who are working on the reservation system at Delta or on Coca-Cola's global marketing system or Georgia Pacific's worldwide system. It's a constant interchange of ideas with people in the courses and in work environments," Senn says.

### UNIVERSITY OF MINNESOTA

The focus of the University of Minnesota's program has shifted over the years from training graduates strictly for leadership positions within IS to teaching students the skills they need to

faculty members is James C. Wetherbe, who, after staking out the leading edge in system development, is now focusing on the strategic positioning of IS within organizations.

Wetherbe heads Minnesota's MIS Research Center, which, along with the IS doctoral program, is the oldest in the country.

### NEW YORK UNIVERSITY

According to Information Systems Area Chair Edward A. Stolor, NYU's major strength is the youth and diversity of the faculty. *Computerworld* survey respondents agree with Stolor, giving NYU's faculty the highest rating—8.26—among the top 10 schools.

"We hire computer science people as well as management and behavioral scientists," Stolor says. "This multidisciplinary focus brings balance and is reflected in the teaching programs. We are educating people for management positions that are very broad in scope."

Alan Lun, a current NYU student, chose the program, which is housed in the Leonard A. Stern School of Business, for its courses. "I was looking for the program with the most varied curriculum in breadth and depth."

### UNIVERSITY OF CALIFORNIA AT LOS ANGELES

One of the least-structured MBA programs in IS is offered by UCLA's John E. Anderson Graduate School of Management, where IS is one of 12 fields of concentration open to students.

"We've been changing over time," says Lewis Leeburg, a lecturer and director of the IS re-

search program. "Early on, the emphasis was on technical subjects, particularly systems development. In the '80s, we started to be more concerned about some of the strategic issues."

The successful development of the program as a prominent force in IS education is attributed to Professor Ephraim McLean, who left UCLA two years ago and now holds the George E. Smith Eminent Scholar's Chair at Georgia State University. As MIT graduate, McLean spent 18 years building the school in the 1980s. Since then, the focus has shifted to the strategic and organizational aspect of information systems.

### UNIVERSITY OF ARIZONA

Known for its technical focus, the University of Arizona's program is seen as the best place to obtain high-level systems training. "Our biggest strength is that we get students involved in real projects," says Jay Nussmaker, the chair of MIS in the College of Business and Public Administration in Tucson. "We get quite a bit of funded research, and our students participate in developing software or some aspect of managing the process."



Georgia State University's James A. Senn

"When they go out interviewing for jobs, they can describe something that the IS manager can really relate to."

AU graduate Barbara Zukerweide benefited from this approach. "The program was very technical, and it put me in a very good stand compared to a lot of other graduates who have almost no technical background. If you look around, it's the people with some technical background who move up in this organization," says Zukerweide, now a senior product manager at NCR, in Columbia, S.C.

### INDIANA UNIVERSITY

The highlight of the Indiana University IS program is the final course, a field project in which students work in teams of three in consultation with Eli Lilly, Owens Corning Fiberglas and Procter and Gamble.

"They work on a systems project under the supervision of a faculty member and the client organization. This course really ties together the rest of their education—background and gives them a jump-start on their careers," says Jeffery Hoffer, head of Indiana's IS program.

Vincent A. Mabert is chair of the Operations and Systems Management program in the In-

diana University School of Business in Bloomington, and Hoffer is responsible for the IS portion of the curriculum.

Unlike some of the other programs that deal strictly on a conceptual level, the school offers a hands-on approach in system analysis and design. Students use commercial software like Accelerator, SQL/DS, and Ingres, to gain an understanding of how to manage technology.

### UNIVERSITY OF TEXAS AT AUSTIN

Offering a comprehensive program is the focus of efforts at the University of Texas. In addition to an MBA concentration in IS, the school offers a highly structured program called Information Systems Management.

ISM utilizes a new faculty, called Classroom 2000, a laboratory/classroom containing 32 IBM personal Computer ATs running graphics and communications program designed for the IS curriculum.

"Our intent is to balance the management issues and technical issues but focus on the use of information systems in organizations," says Management Sciences and IS Department Chair Eleanor Jordan.

### UNIVERSITY OF PITTSBURGH

The focus of the Pittsburgh program is IS Chairwoman William R. King, is to give students the opportunity to get an MBA and an MS in IS. The programs are housed in J. M. Katz Graduate School of Business.

Pittsburgh is also "information-intensifying" the MBA program, King says. "Our notion is to focus on the issues of problem formulation and identification in all the areas of the MBA, more than problem-solving," he adds.

The only program without a center for IS research among the top 10, Pittsburgh has one of the strongest doctoral and research programs in the country, rated with a score of 8 by survey respondents. Rather than a single program, the school's research efforts are dispersed throughout the department.

### UNIVERSITY OF GEORGIA

Though smaller than MIT or NYU, the University of Georgia in Athens also provides a multidisciplinary approach to IS in its Department of Management.

"One of the attractive aspects of our program is that we have tracks to train IS specialists as well as sophisticated users or IS professionals to work in user areas," says Professor Robert P. Bostrom.

The University of Georgia program, chaired by Hugh Watson, is housed in the Department of Management. This stresses the need to integrate IS with other disciplines. "It's a very collaborative atmosphere," Bostrom says.

## Rating the top 10 IS graduate school programs

Below are the mean scores of a survey of 250 IS educators, executives and recruiters. Respondents ranked the schools based on the following scale: 1 = poor, 10 = excellent. Schools that received less than 15 responses and those that do not have a concentration in IS were not ranked.

School	Overall Mean	Placement Mean	Research Mean	Faculty Mean	Business Mean	Humanities Mean
1- MIT	8.25	8.48	7.72	8.05	8.12	8.29
3- U of Minnesota	8.08	8.00	7.64	8.23	8.22	8.29
5- U of California	7.97	8.36	8.05	8.32	7.50	7.63
7- Indiana University	7.86	7.92	7.87	7.97	7.83	7.71
9- U of Pittsburgh	7.73	7.71	7.86	8.00	7.80	7.50

line between those two areas," says Joseph W. Alsop, president of Progress Software and an MIT graduate.

### GEORGIA STATE UNIVERSITY

Boasting one of the largest programs in the U.S., Georgia State University has more than 1,000 IS majors in its undergraduate and MBA IS degrees. The program emphasizes a strong mix of practical applications and theo-

work in user organizations. The school is in Minneapolis.

"We are now allowing sufficient latitude so that people can look at a broader set of activities," says Carl R. Adams, who chairs the Information and Decision Sciences program.

This shift is reflected in the faculty, which now includes professors with technical, organizational and strategic expertise. One of the more widely known

research program. "Early on, the emphasis was on technical subjects, particularly systems development. In the '80s, we started to be more concerned about some of the strategic issues."

The successful development of the program as a prominent force in IS education is attributed to Professor Ephraim McLean, who left UCLA two years ago and now holds the George E. Smith Eminent Scholar's Chair at Georgia State University. As MIT graduate, McLean spent 18 years building the school in the 1980s. Since then, the focus has shifted to the strategic and organizational aspect of information systems.

BY CHUCK PETERSON, CHICAGO

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# INTERGRAPH

## Intergraph Customers Loyal

BY CHARLES FOUNDILLER

A survey of Intergraph users shows that 85% of respondents would buy Intergraph if they had the decision to make over again. Our

### What Users Say

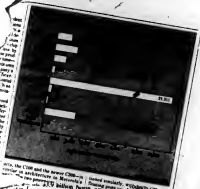
Would buy from same vendor again

85%

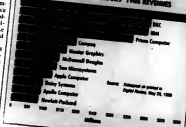
### 1988 Worldwide Workstation Revenue and Marketshare (Estimated)

Company	Revenue	Market Share	Point Change	87-88 Growth
Sun Microsystems	\$1.161	28.2%	+4.2	80.8%
Digital	\$704	18.6%	+1.8	70.8%
Hewlett-Packard	\$695	16.9%	+0.7	59.8%
Apple	\$355	13.9%	4	18.1%
Intergraph	\$275	6.7%	+0.7	41.9%
Silicon Graphics	\$262	6.6%	-1.1	30.4%
IBM	\$205	2.6%	-3.5	13.0%
Others	\$4.132	100%		

Source: Intergraph Corp., Huntsville, Ala. 1988



### LEADING CAD/CAM/CAE VENDORS' 1988 REVENUES



Intergraph didn't suffer as much as the other vendors in the CAD/CAM/CAE market. Intergraph's revenue grew 41.9% in 1988, while Sun Microsystems grew 18.1%, Digital 16.9%, and Hewlett-Packard 13.9%.

Intergraph's revenue grew 41.9% in 1988, while Sun Microsystems grew 18.1%, Digital 16.9%, and Hewlett-Packard 13.9%.

# PRODUCT SPOTLIGHT

## THE UNIX MARKET

### Unix and the swarm toward openness

BY DANIEL GROSS

**A**fter years of sideline obscurity, the Unix operating system has finally managed to gain a hold in the mainstream of corporate computing. That hard-earned progress is threatened by competition on two levels, however. Internal standards squabbling is frustrating users at a time when proprietary systems are moving aggressively to appropriate the concept of interoperability. Even the most entrenched vendors, such as IBM, are offering open-system connectivity to their still-closed networks and operating systems.

Unix spawned the philosophies of portability, connectivity and hardware independence that are now grouped under the banner of "open systems." Vendors have been maneuvering in complex patterns, all waving this banner, to ensure maximum overlap of new standards and open-system specifications with their own intellectual property.

If it were not so frustrating for users, whose strategic information systems investment decisions are blurred by the dust of the battle, this game of politics would be downright entertaining. But the plethora of proposed standards for Unix pleases no one.

"I find this an endlessly irritating subject," says Amy Wohl of Wohl Associates, a consulting firm in Bala Cynwyd, Pa.

The ostensible object of the game is simply defined. A computing system may be deemed "open" if all functions of its levels of communication with foreign objects — applications programs, I/O channels and storage and peripheral devices — are specified and made public.

Consistent and documented access to all its resources gives users a chance to expand and adapt the system, even if the system itself is proprietary.

The next trick is to reach an



MARK KESTING

industrywide consensus on these specifications.

The Open Software Foundation (OSF), a consortium of 150 vendors headed by IBM and Digital Equipment Corp., is seeking to establish industry standards that would prevent AT&T from continuing to write the history of Unix on its own. All but two Unix-compatible operating systems on the market today are AT&T-licensed.

The exceptions are IBM's AIX and Carnegie-Mellon University's Mach. The OSF plans to release OSF/1, its alternative to Unix, sometime in the near future. But there is still contention

within the OSF on whether the core system functions — known as the "kernel" — will be taken from AIX or Mach.

In the spirit of "seeing is believing," the first product announced by the group was OSF/Motif, an X Window System-based graphical user interface. X Window is a public-domain interface developed at MIT under Project Athena. The project, which many of its participants thought was technically misguided, was launched with joint funding from DEC and IBM. Generally speaking, the OSF seems frequently indecisive as a result of its members' reluctance to

lose any proprietary edge.

AT&T, for its part, has led the creation of Unix International, with 80 corporate members and a mandate similar to the OSF's but based on the AT&T Unix System V standard.

Another vendor group, X/Open, has both DEC and AT&T in its ranks and has gained respect among analysts and large Unix users as a relatively objective vendor group.

Armed with advertising and publicity, the three major groups have claimed roughly the same turf in the open systems debate, offering incomplete explanations and vested-interest justifications for their participation.

#### Collective mediocrity

"Anybody who does anything except listen to the market will be disappointed," Wohl says. "I think consortia are very nice, but I'm always distrustful of technology-by-committee, and I'm cynical about mutual efforts by competitors. You don't get brilliant creative work that way. That usually happens in the middle of the night in some small company. Consortia produce middle-of-the-road products."

Actually, except for the OSF, no one is making a significant effort to reinvent the wheel of Unix. "Despite the noise made by DEC, IBM and HP, over 70% of users still get their Unix System V from the AT&T channel," says Bill Kesting, director of technology marketing at San Francisco-based, Inc. and a board member of Uniform, the largest Unix user group (formerly *unixgroup*). "And OSF has yet to ship any product."

In Kesting's opinion, "AT&T has done very well to dramatically reduce the fragmentation in the number of versions of Unix, to a point where the market is now only polarized between the Unix International and OSF camps. It is possible that AT&T and the OSF will resolve their differences, and we'll have one Unix, finally." (Rumors of such a pan-industry alliance abound, but AT&T and OSF deny them.)

The question then becomes,

#### INSIDE

##### A Matter of Trust

Yes, there is such a thing as secure Unix. Page 81.

##### Product Face-off

X.Desktop and Looking Glass: Visual guidance for users. Page 83.

##### On the Edge

With Poix on the way, real-time Unix gains prospects. Page 84.

Gross is chairman and co-founder of Magnetix Press, Inc. in New York.

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## Openness

FROM PREVIOUS PAGE

how significant would such a universal Unix be in a marketplace still dominated by proprietary, yet increasingly interoperable, operating systems?

### Reincarnation

Some feel Unix itself is no longer an essential component of the open systems trend it helped to start. "Who knows what Unix is anymore? In a previous lifetime, I supported the Unix kernel, and now Unix is five or six times what it was years ago. Once you have an API, who cares what you call what's underneath? Unix? Posix? Who cares?" asks Mitch Bishop, director of Unix marketing at Relational Technology, Inc., makers of the Ingres rela-

can be oblivious to the underlying operating system.

This approach has led to two powerful developments in proprietary yet technically "open" computing. On one hand, entrenched vendors, especially IBM and DEC, offer gateways to standard interfaces to proprietary networks and systems. IBM, for example, now offers a gateway from Transmission Control Protocol/Internet Protocol to the favored network among Unix users, into its own Systems Network Architecture. And DEC has plans to make Decnet comply with the Open Systems Interconnect standard and already offers an X Window interface for DEC VMS users.

On the other hand, database software vendors have taken it upon themselves to provide a uniform layer spanning a variety

of operating system's success has had more to do with its lack of available applications than with its technical excellence. But with open systems, the requirements of connectivity, interoperability and simple data interchange between applications increase the demands made of the operating system itself. Unix has had that next-generation functionality for many years but lacked the applications base.

"The market has a delicate balance between price and functionality," says Mark Finley, an analyst at Gartner Group, Inc. in Stamford, Conn. "Many times, the proprietary system delivers the one function you just have to have, and that alone is worth double the price. But in time, that seems to work its way into an environment where it is part of the open system. That's what has been happening to VMS lately, which has been used for DEC's All-in-1, RDB, Ingres or Oracle. But now that you can get Unix with a nice shell on it running the same products, you wonder, why did I pay five times as much? These database managers cover a lot of the flaws in Unix."

### Developmental elegance

Furthermore, from a developer's point of view, Unix offers more efficient and elegant API implementation than any other operating system on the market.

"As far as functionality goes, it's really a very elegant system," says John Bailey, who manages information systems at the University of Tulsa.

Development elegance is not the only reason Bailey likes Unix. Moreover, to him, he says, it still seems like the best means of keeping his fate separate from that of his vendor. "I expect we'll see a major restructuring of the computer industry in this country, and though I'm very pleased with the systems we have, I don't want to be locked into any vendor. I want to keep my options open," Bailey says. There's another factor working in favor of Unix, Wohl says, and that is a strong demand for Unix in Europe. Europe is roughly two to three years ahead of the U.S. in commercial penetration of open systems implementation and thus serves as a useful litmus test of the viability of Unix as an open systems platform.

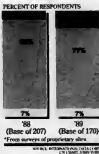
An international user base conforming to common interface standards will help spur commercial applications developers.

The commercial viability of Unix has already been helped by the arrival of DOS emulation products, which allow Unix users to tap into the massive existing base of PC software. It is now possible, for example, to run Lotus Development Corp.'s 1-2-3 and other typical PC applications as a subset of Unix-based PCs. This smooths the migration path for those still waiting for their fa-

### Growing commitment

This year, twice as many minicomputer sites are looking favorably at Unix

- Likely to purchase
- Not likely to purchase
- Not sure



vorite applications to run directly under Unix.

One thing that DOS has always had going for it that Unix has not is its confinement to a single microprocessor standard. The DOS community never had to worry about things such as binary standards, but in Unix, wide-ranging variations in systems design have resulted in disconcerting situations in which different Intel Corp. 80386-based workstations, for instance, running Unix versions from the same source, required different versions of executable files for the same application.

"The marketplace is growing fast, sure, but not as fast as it could if there were reasonable binary standards," Bishop says. "With the Intel 80386 and 80486, a binary standard is emerging. I think there will be a

consolidating a few architectures: Intel 80386, Sparc, Motorola 68000, MIPS. My feeling is bigger players will remove nonstandard RISC architectures. DEC has gone with MIPS, and Pyramid has gone with MIPS. There's hope for binary standards."

If Bishop's predictions come true and binary standards emerge, economies of scale for software developers will create an increase in lower priced, off-the-shelf applications.

### Graphical standards

An even murkier issue, in part because it is the focal point of most of the political maneuvering among vendors, has been the standardization of graphical user interfaces. Five contenders, all supported by mighty patrons, currently share the field: MIT's X Window System interface, which is in the public domain; OS/2; the Open Look specification supported by AT&T, Sun and Hewlett-Packard and Co.'s Apollo division; Sun's Postscript-based News; and Nextstep, another Postscript windowing system bundled with the Next workstation.

The irony is that while user interfaces are literally the most visible part of the open system debate, their lack of standardization is not a major obstacle to interoperability.

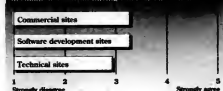
The interface to Unix functionality itself is the heart of the problem. Two main interface standards exist: AT&T's Unix System V Interface Definition, and Posix, originally part of the Federal Information Processing Specification (FIPS), now in the process of industrywide certification by the IEEE.

The Posix standard may both

### Stymied by standards

Commercial sites and software developers are more likely than technical sites to see standards battles as inhibiting Unix's future.

The chart shows a comparison between two groups of respondents: 'Commercial sites' and 'Software development sites'. The 'Commercial sites' group shows 1 'Strongly disagree', 2 'Disagree', 3 'Neutral', 4 'Agree', and 5 'Strongly agree'. The 'Software development sites' group shows 1 'Strongly disagree', 2 'Disagree', 3 'Neutral', 4 'Agree', and 5 'Strongly agree'.



\*From a survey of proprietary minicomputer sites

UNIX INTERNATIONAL INC.

UNIVERSITY OF TULSA

### technical database.

API, or Application Programming Interface, is the keystone of open systems design. The notion of an API is to make the modular components of any application — from communications software to database managers — available to other programs through a clearly defined set of functions. Programs designed to use a particular API

of operating systems and customer applications. Oracle Corp.'s Oracle database manager, for example, runs the same applications on systems operating under DOS, Macintosh, Unix, VMS and other operating systems. The Oracle language itself is, indeed, proprietary.

Of course, the latter development can also work to the benefit of Unix. Historically, the key to

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hurt and help AT&T: hurt, by providing a third-party definition to which vendors can conform without licensing code from AT&T; and help, because the specification is derived from the SVID and is thus a tacit endorsement of Unix as the government standard.

#### The best value moment

In the government, threat for personal computers combined with the need for multitasking and communications have worked strongly in Unix's favor. That is less true in the commercial world, where the same forces have motivated the development of OS/2.

AT&T's failure to effectively promote the use of Unix on PC platforms may have definitively closed a major window of op-

portunity to establish Unix as the micro multitasking standard. "If you think that Unix is going to displace OS/2 as a PC operating system, you're kidding yourself," Wohl says. "It could have had that role; for some reason, it doesn't seem to have achieved it."

Still, it is very likely that Unix and OS/2 will coexist amicably and productively in many corporate networks. "If we look at the initial success of Unix vs. OS/2, Unix has had much more market growth in the cooperative processing marketplace," says Ron Lachman, executive vice-president of Interactive Systems Corp., a Santa Monica, Calif.-based division of Kodak that relies on Unix from AT&T. "The client/server model has its largest base of acceptance in the Unix

marketplace," he says.

While both OS/2 and Unix implement client/server models and extensible architectures, OS/2 heavily favors local-area networking environments; Unix is equally comfortable with the more traditional host/terminal topology as well.

"Of course OS/2 will do well," Lachman says. "But not everything supports LAN Manager, and clearly, Unix has a head start."

The two key issues in open systems networking are distributed data management and distributed data processing. When industrywide standards emerge for transparent sharing of data and computing power over heterogeneous networks, then the mandate of open systems will be fulfilled. The front-row candidates for dis-

tributed data and distributed processing standards are Sun's Network File System (NFS) and Apollo's Network Computing System (NCS), respectively.

NCS is the most widely accepted protocol for Remote Procedure Call, the set of functions that make distributed processing possible in a Unix system. While it has a lot of de facto momentum, it has yet to be rubber-stamped by a formal standards organization. NFS, already a very popular extension of many Unix installations, will be an integral component of AT&T Unix System V Release 4.

Because Unix is in the eye of the open systems storm, its market development has been bogged down with many issues ultimately unrelated to Unix itself. The debate over user interfaces, for instance, spans all operating systems.

Whether the Unix market continues to grow at its current 25% compounded annual rate or not, the operating system's principles of openness make it a safe investment.

More than a technology, Unix has become a model for extensible information systems. Vendors may fight over ownership of the technology, but the model has already benefited even users of proprietary products. Whether these benefits will continue to come in a package labeled Unix will do little to change the game, or the players. ■



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We are using SI, Inc.'s MCS-3 management system, which supports Alpha System V/386 Version 5.3. How can you bridge data that is in MCS-3 to other application programs, and how can you bridge other programs to MCS?

Claudia Trepassi  
Director of MIS  
Bergen Instruments  
Boston

SI, INC.'s MCS-3 is a comprehensive management system that effectively plans, monitors and administers all aspects of the operations of a company. The user can easily bridge data out of MCS-3 with the Report Writer module.

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Typically, a user would have to build a file, using an editor, word processor or other program to the exact format that MCS-3 expects. SI, Inc. will gladly supply that format on request. If you are able to write a program that selectively adds to the MCS-3 files. We have written such programs, but they are not of general use to the public.

# Can a Unix system really be trusted?

BY STEVE SUTTON

Many people think all there is to making Unix secure is fixing the little problems that give the operating system its reputation of being as leaky as a spaghetti strainer. Unfortunately, the problem involves more than a scrubbing of code that was originally designed with little thought for security. It requires significant additions.

These additions have been a long time coming. Part of the problem was that the term "secure" is a lot like "high performance" in that it is meaningless without a qualifier. Until the U.S. Department of Defense (DOD) established a working vocabulary in 1984 with its DOD Trusted Computer Systems Evaluation Criteria, or Orange Book, no one was quite sure where to begin.

The Orange Book establishes the features and assurance characteristics of DOD trusted operating systems, rating them on a progressive scale of classes that ranges from C1 (least secure) to A1 (most secure). An agency of the DOD, the National Computer Security Center, evaluates candidate systems and assigns the class rating.

The C classes can be thought of as "security enhanced" systems. While such systems offer some security protection, they really cannot be considered "secure" in the common use of the term and would be of little use in malicious environments. Standard Unix systems are probably C1, although this has never been tested. The addition of a security audit trail takes Unix to the C2 level. By contrast, the B3 and A1 classes can be considered "extremely secure," but few users really need or can afford this level of protection. This leaves B2, which can be considered "tightly secure," and B1, which can be characterized as "secure," but not "tightly so. Class B1 is a good start for users who want significant security protection, and B2 will serve them well for a long time to come.

## Adjusting expectations

Orange Book-favored versions of Unix are on the horizon. They took so long because early customers demanded the most secure systems; typically B3 or A1. These systems were too expensive, and the market for them too thin, to support more than specialty product suppliers. Today, however, customer expectations and the industry's ability to provide security in mainline Unix systems seem to have met at about the B1 level, where

there is much activity.

Virtually every major Unix vendor now has a "secure Unix story" that inevitably includes Orange Book compliance. There

is a strong IEEE Posix effort, which is solidly supported by the National Institute of Standards and Technology to define Orange Book-inspired extensions to the current Posix standards.

In 1986, Gould's UTX/32S, a C8 system, became the first full

Unix system to complete full DOD evaluation. AT&T Unix System V/MILS should soon become the first to achieve B1. There are several other Unix systems in evaluation at C2 and B1 levels.

Two significant systems are

testing the even-more-stringent Class B2 barrier. Trusted Xenix, originally developed by IBM and now being further developed and marketed by Trusted Information Systems, has been in the making for some time. The second contender is AT&T Unix System V, based on Release 4.0. Both are wrestling with the very difficult "modularity" criterion of B2. Basically, B2 requires that

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Sutton is a consultant specializing in security systems. He is based in Urbana, IL.

the trusted software be internally "modular," which, at the very least, entails a significant restructuring of the standard Unix kernels.

#### Security at a cost

Some major Unix vendors are now producing their own versions of secure Unix. However, adding Orange Book features is expensive. Cost estimates of 25 man-years for B1 are common.

Until a new class of product — trusted Unix "extension packages" — came along about a year ago, few vendors could afford that kind of investment in the face of an uncertain market. An extension package is the code, documentation and, commonly, evaluation support materials needed to achieve a particular Orange

Book rating. These packages, designed to integrate into the standard versions of Unix, have been a major factor in boosting the availability of secure Unix systems.

Because they still represent a significant enhancement to Unix, these packages are targeted at Unix vendors rather than end users. Extension packages also tend to target C2 and B1 levels because the B2 modularity criterion is difficult to implement as an extension package.

Over the next few years, several major Unix vendors will offer standard secure Unix systems based on the Orange Book. C2 will be common but will become a "positive but minimal" approach. B1 will also be common and generate significant attention. B2 systems will be rare. B3 and A1 will still be confined largely to

specialty products.

The invasion of security into modern graphics interfaces is also inevitable. The Defense Intelligence Agency has defined a graphics workstation standard — that is closely aligned with the Orange Book and for which several companies are building workstation products.

#### Supporting security

Unix network security is, regrettably, lagging. Most Unix systems under evaluation minimize or omit their networking components. Networking security is just a younger field and more difficult. Usable forms of networking security will emerge over the next few years, but slowly. Another development that will represent a

major advance in the overall usability of secure Unix systems but security quite a way off is the creation of trusted application programs that build on the secure operating system base. There are two potential categories of trusted application programs.

One category consists of programs with significant internal security properties that could be synchronized to those of the underlying Unix system. Several recently announced relationships between database vendors and secure Unix vendors offer some promise of progress in this area.

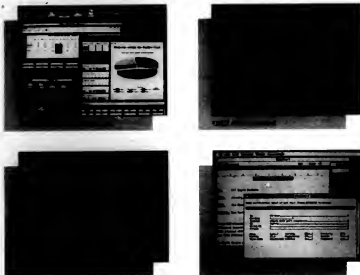
The second kind of trusted application needed to make secure Unix fully useful would consist of programs that offer no particular security features but have been adapted to avoid being crippled by the strong protections of the secure operating system.

The first versions of the trusted Unix systems will be like prototype crash protection vehicles. Big, strong and heavy, they will offer significant protection but will not be easy or economical to drive and may not even get you where you want to go.

Some of these deficits can be minimized. One way is to make sure that you check just how much the addition of security features has altered the functionality of the Unix system under consideration. It isn't really hard to make Unix secure. What is hard is to do that and still keep it Unix. If a system is secure but won't allow existing software to function, it won't be of much use.

Nothing in the Orange Book or other such standards precludes a vendor from providing ample backward compatibility or fully supporting the current look and feel of Unix (such as it is). In fact, secure Unix forums such as Poix seem to be committed to this goal. The problem is that some vendors simply find it easier to remove Unix procedures than to make them work with new security features. \*

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### ASK THE VENDOR

I currently use the Unipress Emacs, a writing and programming editor, for Unix computing and image processing. I work primarily on SunOS Version 4.0 and Interactive UI/386 Unix Release 4, but I feel somewhat limited because Emacs does not support all the features available in X Windows. Will there be any useful enhancements soon?

Ron Natalie  
Senior vice-president  
KTS, Inc.  
Sterling, Va.

UNIPRESS SOFTWARE: X Window support has recently been enhanced in Version 2.3 of the Emacs Programming and Technical Writing Editor. The product now includes multiple X Windows with icons, mouse control, scroll bars and pop-up menus. Capabilities currently under development are hypercard-style buttons, tear-off menus and live icons (e.g., trash can).

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# Bringing point-and-click functionality to Unix users

*X.Desktop, Looking Glass differ in following Unix procedures*

BY DALE DOUGHERTY

Two products — IXI Ltd.'s X.Desktop Version 2 and Visix Software, Inc.'s Looking Glass — are competing to emerge as the standard "Finder," the home base from which all Unix applications are launched.

Both promise to help make Unix workstations as accessible to users as Apple Computer, Inc.'s Macintosh. Both offer visual interface shells, equivalent to the Mac's Finder, that use a desktop metaphor to organize the file system and allow users to interact in a window that displays icons representing files and applications. Instead of typing a command to open an application, users can move a mouse pointer to select the icon and click a mouse button to initiate actions.

X.Desktop and Looking Glass are garnering a lot of interest in the Unix community because they are among the first applications to run under X Window System and implement the OSF/Motif graphical user interface.

X.Window has been embraced by vendors as the vehicle for delivering easy-to-use graphics applications on Unix workstations. Developed at MIT, X.Window defines the underlying network protocol but avoids defining a graphical user interface. That is, it does not specify the look and feel of applications running under X.Window. That has been left for the open

that are application-specific. Another icon is a temporary directory, similar to the Macintosh's wastebasket, where users can drag files to remove them from the system.

You can drag any file or application icon from its folder and place it on the desktop. In that way, you can place commonly used applications and files where you can easily find them from your session to the next. You can open any application by double-clicking on its icon.

X.Desktop also implements drop actions; that is, if there is a printer icon, you can drop a file icon on top of it to print a file. Unlike the Macintosh, X.Desktop uses pop-up menus, which are displayed when you press down a mouse button inside a window. Only one pop-up menu is provided by default. X.Desktop Version 2 is much improved visually over previous releases, sporting higher definition cursors and icons.

## Through the Looking Glass

In Looking Glass, you see a system window, one or more directory windows and a desktop window. From the system window, you can open any directory. A directory window is split into two areas: subdirectories are shown as folders in the top part, and files are shown in the bottom half. Like X.Desktop, double-clicking on a file opens the application that created the file.

The desktop window is a panel in which you keep commonly used applications or files. (The Next, Inc. machine applies the same concept.) The desktop panel is a convenient place to store applications so that you can launch them without navigating through the directory structure.

All Looking Glass windows contain a menu bar. Macintosh-style pull-down menus organize a number of common tasks and make them easy to identify and initiate. For instance, you can set preferences, such as the desktop colors, by making a menu selection. X.Desktop preferences are not set from inside the program but by editing initialization scripts. That is very much the Unix way to do it, but it is more difficult on the user.

The Looking Glass desktop is crisp, sophisticated and well organized, largely because many user actions can be accessed from pull-down menus. It includes subtle features found in the Macintosh Finder, such as dragging to select the icons within a region. It does not, however, support dropping an icon on another icon as a way of initiating actions, as does X.Desktop. Drop actions offer a potentially easy way for Unix users to communicate with devices.

**Flexible rules and customization**  
X.Desktop and Looking Glass both had one major problem to solve — how to implement the desktop on an operating system that was not designed for a point-and-click interface.

For example, the Unix operating sys-

tem does not distinguish among different types of files. Both X.Desktop and Looking Glass employ a file typing mechanism that establishes rules to determine file type and, by extension, what icon to assign a file and what action to take when that file or application is opened. Sets of rules are provided, but both products also allow users to write their own rules or change the existing ones. Multiple rules and actions can be specified. For instance, the default action for a text file may be to open it for editing; however, a secondary action could be specified that prints the file.

This method of invoking applications is a feature that can be used to great advantage by administrators and developers in making it much easier for users to access applications. The only possible problem with this is that longtime Unix users will find it difficult to specify Unix command-line options that vary from time to time.

No single product can cover every situation in determining how much of the Unix system users need to access or even what should appear on the desktop. That, both products are highly configurable. A systems administrator, analyst or applications developer is expected to customize the product for the end user's needs.

This is important, because one should not consider X.Desktop or Looking Glass as "canned" user interfaces. In fact, this is one area in which they exceed the capabilities of the Macintosh Finder by allowing customization of nearly every detail. Because X.Desktop and Looking Glass

implement the same interface, they look very similar. They are, however, very different implementations.

X.Desktop works the way you'd expect a Unix/X application to work. It is implemented using the OSF/Motif tool kit, and under the surface it is doing very standard Unix things. When it displays information about files, you can depend that the information is being accessed in the usual way from the Unix file system. Doing things the standard way is comforting to those in search of standards, but there can be some performance penalties.

## Different strokes

If Visix Software didn't do it the standard way, it is because it believes it did it a better way. The firm built its own X tool kit to meet its own performance and functionality requirements. It also bypassed some Unix facilities for the same reason. One example is the File System Server (FSS), a systemwide database that compiles information about file types and their associated rules. When you lists the contents of a directory, Looking Glass gets this information from the FSS; it does not access the Unix file system.

Nor does Looking Glass create a process to get this information; it handles the request internally. Looking Glass runs as two processes — the File System Server and the Looking Glass process — which can achieve an overall performance gain.

X.Desktop and Looking Glass are available for a variety of Unix platforms, both through OEMs and in shrink-wrapped versions that start at \$495. ■

**X**.DESKTOP works the way you'd expect a Unix/X application to work. . . . Visix Software built its own X tool kit to meet its own [performance and functionality] requirements.

market to decide, and the choice seems to be between Motif from the IBM-backed Open Software Foundation and Open Look from Sun Microsystems, Inc. and AT&T. A graphical user interface defines a visual style and a common set of techniques that all applications can employ to interact with users.

The main appeal of a graphical interface is that it is intuitively understood; users feel comfortable and become productive more quickly. If Unix is to become a serious platform for business applications, learning Unix needs to be a non-issue. For that reason, these products are likely to be judged not only by standards in the Unix community but by how close they come to the Mac "standard."

When you log on to X.Desktop, you get a single window with several folder icons, one of which represents the user's home directory. If you open a folder, you may see other folder icons along with file icons

Dougherty is an editor and writer at O'Reilly & Associates, a Cambridge, Mass.-based technical publishing company specializing in Unix and X Window Systems.

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# Surge expected in real-time sector

BY ELLIOT KASS

For the first time in its existence, real-time Unix is starting to attract some big-time attention.

Although real-time Unix systems have been available since about 1982, they never made much of a dent in the market. Developed for multitasking applications, the operating system was not well-adapted to the task prioritization needed to guarantee response time. On the whole, processing time was substantially slower for real-time Unix than for the dedicated proprietary systems that claimed about 90% of the market.

Through the mid-'80s, real-time Unix was the domain of a half-dozen or so smaller specialty houses that concentrated on the real-time environment. Only in the last couple of years have the bigger vendors become interested in the market.

During that time, the number of companies providing Unix with some degree of real-time functionality has more than doubled. There are now about 15 providers in the market, including such major players as IBM, AT&T, Digital Equipment Corp. and Hewlett-Packard Co. Most of the other major system suppliers have expressed interest in the area.

What is piquing all this new interest? A number of things.

First of all, users are discovering that, for all its well-known faults, Unix can offer tremendous advantages over proprietary systems in a multiprocessing environment.

Applications written on Unix are portable. Unix is supported

by reduced instruction set computing (RISC) and other advanced platforms and provides far more functionality than most other real-time operating system kernels. Programmers are generally familiar with the system, and it is relatively easy to write applications on Unix—all the more important because real-time applications are comparatively difficult to develop and debug.

**Response times improve** Another contributing factor is that some of the smaller firms that have specialized in Unix-based real-time systems have substantially upgraded the quality of their products, particularly over the past year, boosting response time to a level that approaches the speed of simpler, dedicated systems.

These improvements have induced some users, such as Moses Joseph, manager of computer applications at Pepco Research and Technical Services, the research and development arm of Pepco, Inc., to begin implementing real-time Unix.

Pepco is experimenting with real-time Unix applications in a pilot plant with the goal of simplifying plantwide automation by breaking the undertaking down into smaller, more manageable equipment modules. The process-control applications at the heart of each module run under real time. Unix's multiprocessing environment ties them all together, enabling the activities of each module to run simultaneously.

In the long run, however, it is not just interest in multiprocessing or the partial conversion of

users like Joseph that is causing the larger vendors to circle. At the heart of the matter is a growing belief that the potential for real-time Unix extends far beyond the need for real time itself.

"In the early '80s, users bought real-time Unix because it was the only generic real-time system," says Wendy Rauch-Hindin, president of Emerging Technologies Group, Inc., a Long Island-based technology and market research organization.

In the future, however, a whole new group of buyers will invest in real-time Unix because of the portability it will offer.

According to Rauch-Hindin, once an industry-wide standard for real-time Unix systems becomes available—in the form of IEEE P1003.4 Portable Operating System for Unix (Posix), real-time Unix will break out of its confinement in special-purpose niches such as manufacturing and process control to become part of a new standard Unix.

"Users without real-time requirements will use the same system, but without the real-time extensions, which will be licensed separately," says Rauch-Hindin.

The catch is that none of this can happen without a finalized Posix standard and, although Posix is tantalizingly close to completion, the approval process still stretches ahead. Posix developers estimate that full approval is nine to 12 months off, while Rauch-Hindin postulates it will occur in 1992 or 1993. Some

vendors are already pressing ahead with products specifically geared toward Posix, convinced that user demand will justify the investment. However, most are biding their time and watching for signs of true commitment on the part of users.

"They won't start pushing them for the next few years," ac-



Pepco's Joseph sees untapped uses

cording to Rauch-Hindin, because that would mean undercutting their own proprietary systems "for something that isn't debugged, standard or widely accepted." While the big vendors hang back, waiting for a broader market to get, smaller companies will scout in and snap up customers anxious to get started with a nonproprietary real-time system.

Joseph is one purchaser who would rather buy from a small provider now than spend the next few years waiting for the crowd to catch up. "Do you know how long it takes for them to get these standards really stretched ahead," he asks. "I am willing to go ahead now before the standards are hammered out completely. That's how you grab a competitive edge."

In spite of his willingness to jump out ahead of the standards process, Joseph is not willing to bypass them entirely. He chose to work with Lynx, a small privately held start-up based in Campbell, Calif., and its Unix-based LynxOS operating system for Pepco's pilot project because, he says, the vendor is carefully tracking Posix's development, and "when the standard does come out, it will most likely be compatible."

That is more certainty than many of the larger vendors could offer, according to Joseph. "The major vendors are playing a watch-and-wait game. They want to know if we're serious about this," he says. His reply? "We haven't gone out and sold the ranch on real-time Unix. It's a commitment, but it's not a sweeping commitment."

It was not only Posix compatibility that was at issue, Joseph adds. Lynx's experience in real-time applications and the sophistication of their product outweighed that of their larger competitors.

The issue of expertise vs. marketing muscle is a crucial one to the smaller systems houses concentrating on the real-time environment. "The next two to three years represent an important window of opportunity," comments Ash Braham, Cambridge, Mass.-based Venturcom, Inc., a director of marketing.

This is the time frame available to smaller vendors to demonstrate to users unwilling to wait that they have the ability to meet their requirements. By 1992, the market for real-time Unix will have become much more crowded.

Braham's estimate of the schedule for market development corresponds with Joseph's observations.

Most of the current demand for real-time Unix "is really quite specialized," Joseph says. "The bulk of the demand won't come for another two to four years down the line. A lot of people have applications for it and don't even realize it. Most people are waiting and watching rather than doing anything." ■

Kass is a free-lance writer based in Jacksonville, Fla.

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Many of these packages are in development at this time, with beta testing in selected markets initially.

## ASK THE VENDOR

**How do real-time Unix operating systems, such as LynxOS, compare with proprietary systems in terms of performance and compatibility with shrink-wrapped software?**

**Tom Forgetter Software engineers Computer Applications Software Technology Los Alamitos, Calif.**

**LYNX REAL-TIME SYSTEMS:** LynxOS was designed to give real-time capabilities to 32-bit microcomputers based on the Motorola 68000 processor family, and other processors including the 80386, RISC and Sparc.

LynxOS is based on a real-time multitasking, multuser kernel. Proprietary real-time systems are very fast but can't run standard Unix software. LynxOS combines speed comparable to the proprietary systems with the portability and compatibility of standard Unix. LynxOS runs shrink-wrapped packages such as Informix, Wordperfect, QCalc and Fortran, Pascal and Basic compilers.

LynxOS gives users X Window support and compatibility with standards such as University of California at Berkeley Unix 4.2, Posix and System V Interface Definition. Unlike standard Unix, however, LynxOS allows users to prioritize and preempt tasks, which real time requires.

# COMPUTERWORLD

# COMPUTERWORLD

## Databases for the Unix environment

[illegible]

The companies included in this chart responded to a recent telephone survey conducted by *Computerworld*. When a vendor is unable to provide specific information about its product, the abbreviation NP (not provided) is used. When a question does not apply to a vendor's product, the abbreviation NA (not applicable) is used. Further product information is available from the vendors.

## PRODUCT SPOTLIGHT

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architecture

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binary compatibility

**No** POSIX  
compliance

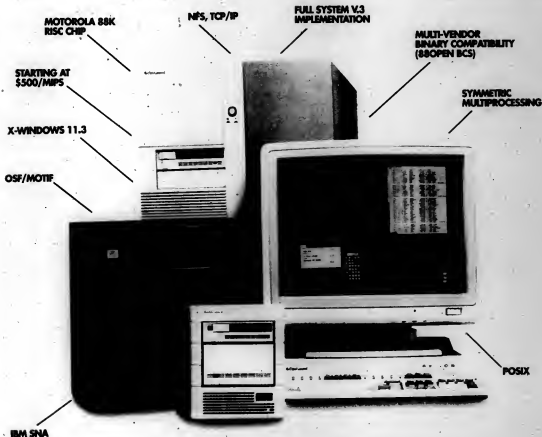
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under \$2500/MIPS

**No** symmetric  
multiprocessing

The above comparative product data is based on industry newsletters,  
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And the ultra-high reliability, uptime and availability that mission-critical applications demand.

Yet, while the VAX 9000 is certainly a mainframe, it is by no means a traditional mainframe. Because extraordinary cost, complexity and inflexibility are not part of Digital's computing style.

**Our style is the VAX style.**

Known as the most easy-to-grow, easy-to-use and easily networked architecture in computing. An architecture with 6,500 applications already existing today. And the architecture with the lowest cost of ownership. Which makes

the new VAX 9000 mainframe a better choice for such high-volume production applications as global securities trading, accounting, administration, billing, intelligent network management, funds transfer, manufacturing resource planning, and claims processing. And a whole list of other large, database-intensive applications.

All of which should make it quite clear there's nothing a VAX 9000 mainframe can't do.

**It's a supercomputer.**

The VAX 9000 mainframe is also Digital's entry into supercomputing.

Each VAX 9000 CPU can be optimized with vector processing that gives it up to 500 MFlops of number-crunching performance.

Vector processing makes the VAX 9000 series ideal for such incredibly number-intensive tasks as predicting the course of the economy, or the course of an atomic particle.

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Our compiler can also automatically divide the work across several processors in a VAX 9000 system, making your applications run even faster.

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Which is very important when you consider this: rewriting software is the highest cost of owning a computer system.





The VAX style accommodates other vendors' styles of computing, too. Our Network Applications Support (NAS) makes it so easy to do multi-vendor networking, you can turn a whole company full of incompatible computers into one big network of suddenly compatible computers.

And the VAX 9000 series takes advantage of another unique feature of VAX computing: the VAXcluster™ System. Simply put, a VAXcluster System makes many individual VAX computers all work in concert, sharing data, applications and peripherals. Which is not only an easy way to increase your system's power. It's also an easy way to make sure no single point of failure can bring your system down. Perfect when the mission's critical.

And now, VAXcluster technology has been enhanced to provide balanced I/O performance for high-capacity systems like the VAX 9000 mainframe. And you can scale I/O capacity incrementally as the workload grows.

#### **It's reliable.**

As surely as the VAX 9000 mainframe will set new criteria for

performance, it will set new criteria for reliability.

The VAX 9000 series detects and fixes problems at the most opportune moment. Before they happen. Because intelligent self-diagnostics and intelligent maintenance are built in.

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What's so powerful about the VAX 9000 series isn't just what's inside it. It's what's behind it.

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# IN DEPTH

## 'Hello, Europe, are you there?'

*Fragmented national telecom could slow Euro-American net connections*

### Continental divide

BY RAYMOND BOULT

European telecommunications infrastructures are unlikely to be either unified or de-regulated in time to support the many U.S. Fortune 1,000 companies that intend to set up on "The Continent" for the much-vaunted economic unification of 1992.

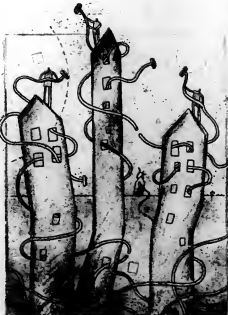
This does not mean that U.S. companies should reschedule their plans, however, or redesign their international communications networks. It does mean, though, that firms should be on the lookout for the same pitfalls that are the daily bread of many of their European counterparts. Realism is key.

"European communications does not exist," says Audrey Mandela, director of European research at the Watford, UK-based Yankee Group Europe. "There is a lack of true European networks, and telecommunications services are uncoordinated."

Despite the many ethnic and cultural links between the U.S. and Europe, the latter's approach to telecommunications is very different from Uncle Sam's. In most European countries, common U.S. networking concepts such as "T1," "Centrex" or "the telephone company" are virtually unknown.

Telecommunications firms are usually a state monopoly, often linked to the mail service. For an analogous situation, imagine AT&T

Real covers European business and technology issues from Paris.



DAVID FOXALL

### Competition needed

BY ALAN KAMMAN

Telecommunications standards are a crucial — and controversial — part of the 1992 program. Currently, regulatory guidelines in the European Economic Community (EEC) vary from country to country. But that will change as the EEC encourages a common market in telecommunications equipment, services and transmission — a process certain to invite competition.

The EEC has a tremendous incentive to create a unified telecommunications market. No EEC nation represents more than 6% of the world's telecommunications market, but the EEC as a whole equals some 20%. The EEC commission's telecommunications green paper (initiated to provoke debate; a white paper gives final directives to be implemented) estimates that by the year 2000, up to 60% of all employment opportunities in

the EEC will depend on voice, data and imaging technologies.

The commission believes Europe's survival as a technological world power is directly related to its establishing a world-class telecommunications industry. To do that, Europe must maintain a solid research and development capability. Conversely, the worry expressed by non-EEC telecommunications exporters, such as the U.S.

Kamman is national director of telecommunications markets at KMPG Pitt Marwick. Reprinted with permission from *World*.

- Regulated national monopolies dominate
- Technical issues loom large
- "European communications does not exist"

# How to decide on a

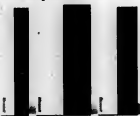
More than likely, you've seen a few spreadsheets in your day. The problem is, on any given day you might find several in use within your very domain. One for Mac. One for MS-DOS. Even one for MS OS/2.

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Consolidated Financials of ABC Corp.		
	1989	1990
Revenue	\$ 814,321	\$ 1,023,223
Costs and Expenses		
Cost of Revenue	123,754	151,179
Research and Development	78,183	25,981
Sales and Marketing	154,814	88,479
General and Administrative	18,792	15,687
Net Profit	377,511	147,236
Net Profit Margin	46.4%	14.4%
Operating Income	288,724	108,437
Operating Margin	35.5%	10.6%
Operating Assets	202,438	228,461
Operating Liabilities	79,120	48,479
Operating Equity	\$ 243,295	\$ 243,292
Operating Return	14.6%	14.6%
Operating Assets	39,475	22,231

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# for all.

## OS/2-Presentation Manager

Consolidated Statements of Income (in thousands)

	1989	1990	1991
Net Revenue	\$458,135	\$325,723	\$388,140
Costs and Expenses			
Cost of Revenue	125,754	85,179	42,871
Research and Development	72,183	25,981	25,407
Sales and Marketing	154,414	88,479	52,809
General and Administrative	18,999	15,647	9,722
Total	371,341	215,286	130,809
Income	86,794	110,437	88,241
Income Tax	25,848	11,964	4,897
Income Before Taxes	362,536	118,461	86,120
Income	58,125	46,879	25,541
Income Before Taxes	\$ 242,545	\$ 182,522	\$ 99,397
Income	\$ 2.89	\$ 1.96	\$ 1.40
Income Before Taxes	\$5,473	\$5,732	\$4,383

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## Boult

CONTINUED FROM PAGE 91

and the U.S. Postal Service being part of the same organization.

In other words, the person from whom you order a telephone line has the same legal status as a federal employee. Even in the UK—the only major European country even remotely approaching deregulation—privatized British Telecom, Inc., still has the de facto monopoly in many areas.

But monopolistic practices can have far-reaching effects. In France, for instance, the political clout of the several hundred thousand telecommunications and mail personnel—who have a vested interest in maintaining their status as public employees—has enough impact to sway the results of the country's notoriously close-run presidential elections.

The result is that a succession of ministers have run into political trouble by wrestling with the tricky question of telecom deregulation.

Trying to avoid mistakes made by his predecessors, Paul Quilès, the incumbent minister of the Poste, Telecommunications, Espace (PTE), recently advanced deregulation proposals. A Socialist, Quilès said that he thinks his right-wing predecessor went too far in deregulation. It seems clear that he has no intention of going any further. These measures, however, were seen by some as a vague plan for separating mail and telecommunications operations, with the French state holding on to its monopoly of both.

More positively, the West German Deutsche Bundespost, the nation's mail and telephone organization, recently took a major step toward deregulation by forming three state-controlled companies to handle telecommunications, mail and mail-order checks and the Post Office savings bank.

In West German telecommunications firms, leasing transmission lines and telephony are to remain a state monopoly. Under the plan, other services of major infrastructural interest will be designated by government decree.

Provision of these services by the Bundespost will be obligatory, but "fair competition" will be allowed. All other services are deregulated, in theory at least, except for restrictions on the number of radiotelephone operators and data protection considerations.

However, these West German moves are viewed just as skeptically by liberals. The fragmentation that has resulted from various European telecommunications firms going their own way for so long can be quite dramatic. The UK boasts a heavy concentration of 2M bit/sec. leased lines, a result of heavier business demand and a deregulated telecommunications environment.

Just across the English Channel, France's specialties are notably videotext—some 80% of the world's videotext terminals are "Minitel," a trademark of France Telecom, the corporate name of the French telecom monopoly overseas

by the PTE—and Integrated Services Digital Network (ISDN), although West Germany is rapidly catching up in the latter field.

One European organization that has succeeded in implementing an international network is BNF, France's largest commercial bank.

BNF features 14.4K bit/sec. leased lines linking Paris to nodes in New York, London, Hong Kong and Singapore. The London node is linked to New York and Hong Kong. A consortium of PTTs bought majority control of the network from Computer Science Corp. This acquisition was seen by some observers as an

## Kamman

CONTINUED FROM PAGE 91

and Japan, is that such research will result in EEC-type standards, politics and regulations that will close the market to outsiders.

### Getting a busy signal

However, technical and regulatory issues will make revamping the communications network no easy task. For one, the Postal Telephone and Telegraph (PTT) administration in each member nation has heavily regulated telecommunications, while the computer sector has been given freer competitive reign.

Second, the regulatory and research environment outside the EEC is highly competitive. The International Telecommunications Union (ITU), an intergovernmental correspondence agency of the United Nations, is already committed to resolving global telecommunications issues.

While each of the ITU's 166-member nations reserves the right to regulate its own systems according to national laws, these laws must be compatible with international standards to ensure that each of the world's 500 million telephones can communicate with one another.

Now, interconnection among the world's millions of terminals, workstations, facsimile machines, computers and videos is the primary issue.

While the creation of a single telecommunications market will clearly open up opportunities, there is growing concern outside the EEC that standards will limit the market to outsiders. Non-EEC telecommunications exporters point to several developments that signal such a possibility.

One is the EEC's increased focus on research. In its effort to establish a worldwide telecommunications industry, the EEC Council approved the European Strategic Program for Research and Development of Information Technologies, an organization researching projects in the information technology area.

The council then funded the Research and Development Program in Advanced Communications for Europe to concentrate specifically on telecommunications research that could lead to standards favoring EEC-based companies.

The U.S. should know. Prior to the 1984 deregulation, the Bell System purchased virtually all of its switching equipment and most of its transmission equipment—much together totaling about 70% of the capital costs of installing a telephone system—from U.S. manufacturers, primarily from its own Western Electric Co.

The reasons relate directly to the profitability of the parts of the Bell System that were regulated by the government as a legal monopoly and the manufacturing entities that were not regulated. Since deregulation, offshore manufacturers have had a field day selling in the U.S.

Perhaps one of the biggest concerns centers on the provision of basic services. National PTTs want to continue their monopoly on regulating basic services

(sometimes referred to as reserved services), while permitting competition for value-added services. But that's where questions arise.

The PTT's definition of basic services—telephones and telex—has been barred as technological developments now enable computers to transmit data and images.

An even greater worry is that reserved service regulations will refer to all voice and basic data communications. Thus, a company could not build its own fiber-optic or microwave network or use private teleports for satellite transmission without approval and regulation by the PTT. In the past, EEC administrations have been extremely conservative about permitting the construction and use of private networks.

### Outside looking in

The green paper proposes other policies that concern non-EEC suppliers—for example, PTTs continuing to have special rights or exclusivity in operating the network infrastructure. No need for MCI Communications Corp. or U.S. Sprint Communications Co. to supply here.

However, the paper also exposes some positions that are encouraging for outsiders, including "free, unrestricted pre-service providers, full application of the community's commercial policy to telecommunications."

Not all the proposed changes will necessarily attract U.S. and other foreign competition to the EEC. But the telecommunications market will clearly become more open than has been. World economies can no longer tolerate isolationism, and no group knows this better than the EEC.

Increasingly, all nations, both within and outside the EEC, need to cooperate and expand together. Otherwise, they will not grow individually at all. ■

## London calling

Michael L. Ford, president of British Telecom, Inc., quoting organization Chairman Ian Vulliamy on the importance of *The Integrated Services Digital Network to BT*. Excerpted from a speech given at Info, Oct. 12, 1985, in New York.

"I hesitate because my personal view of ISDN is agnostic. I don't lean to the extreme that says ISDN is a solution seeking a problem, but I do wonder whether we foresee the market moving in such a way that we can say, 'Yes, ISDN is the greatest thing since sliced bread, and it is our main future for the network.'"

"ISDN will have a strong place in the UK—as a question. But I don't see it as the blanket solution that certain others do. There is a European view that ISDN is the future. I think it is just one part of the future. Some customers and carriers will have their own ISDN, and some will want something else. Since many of the features of ISDN are already available in other ways, unless ISDN gives something that is either cheaper, where is the joy in it?"

### Europe's growing network backbone

Despite optimistic projections, analysts question whether the growth in T1 lines will be fast enough to meet international networking demands

	Leased TDM bit/sec. lines			
	ANS	DSO	DS1B	DS3
UK	8,500	13,000	19,000	25,000
France	400	500	600	650
West Germany	85	200	325	475
Netherlands	25	75	175	300
Sweden	15	25	35	45
Spain	0	0	50	125
Projected				

SOURCE: TELECOM EUROPE

SOURCE: TELECOM EUROPE

important development because it emphasizes the international infrastructure. Paris and Singapore also are linked through the countries' respective packet-switching systems—Inpac and Telepac.

The BNF system highlights an important element in international networking: managed network services (MNS), which uses national telecommunications infrastructures for local connections.

In addition to Infonet (in which several PTTs have a stake), U.S. firms IBM and GE Information Services have Pan-European MNS offerings. Furthermore, great discussion has surrounded the Conference of European Postal and Telecommunications Administrations' proposed adoption of "one-stop shopping" policy for international leased lines.

Mandela predicts that over the next five years, "networks will feature international extensions and the integration of voice and data. Corporate networks will be extended to customers and suppliers, while migration to OSI standards will be facilitated by the introduction of ISDN."

Indeed, Europe appears to have something of an ISDN headstart, compared with other advanced regions such as North America and Japan.

In this context, Gerard Schrader, chief executive officer of CAP Sesa Conseil, a subsidiary of one of Europe's leading software and services houses, recently studied ISDN user expectations. Schrader concludes, "For the foreseeable future, major traffic flows will remain transactional, including file and document transfers and messaging. Success in migrating these to ISDN depends on significant cost reduction and nationwide availability of the technology. Inter-company exchanges are a good opportunity for ISDN. The latter may displace some of the current switched or leased-line services if cost-effective." ■

# Mattel's European net may need upgrade

BY ELISABETH HORWITT

With approximately 50% of its corporate revenue from overseas sales, Mattel, Inc. is closely tracking changes in the European business climate—and seriously exploring ways that its business and networks can benefit from the upcoming economic unification in 1992.

Early this year, the Hawthorne, Calif., firm implemented a private international network to link U.S. sites with manufacturing facilities in the Far East and with marketing and distribution facilities in Europe.

The toy manufacturer is filling up the network's bandwidth with all the data, voice, telex and facsimile traffic it can handle, according to Jeffrey Harris, Mattel's director of information technology. The network, however, was designed to support Mattel's current European operations, which treats each country as a separate market, Harris says.

**W**E WOULD love some organization in Europe that says, 'I can lease you any bandwidth you want, anywhere you want.'"

JEFFREY HARRIS  
MATEL

Mattel is evaluating the idea of taking a more unified approach to its European inventory, distribution, accounting and marketing facilities. "We would be treating countries in Europe very much the way we treat states in the U.S.," Harris says.

If this happens, Mattel will also have to upgrade or possibly redesign its network to handle the increased communications traffic among European sites and between Europe and Mattel's information system centers in the U.S.

Inventory is one key area of Mattel's business that will be affected if 1992 brings the expected changes. Right now, Mattel has autonomous distribution centers in each country; it cannot, for instance, use an oversupply of Barbie dolls in West Germany to fill an unexpected order backlog in Spain. But if trade barriers go down, the company could set up a common inventory system that would match supply and demand across the entire European market.

Such an arrangement, Harris says, would be particularly helpful during the critical period from August through October, when Mattel pulls in 40% to 50% of its sales. During this time, he adds, "You have to be a soothsayer to predict where the stuff will end up."

Packaging, of course, as well as the language used for written material, differs among European countries. But, according to Harris, "If we were able to put a new product in common warehouses and perhaps do packaging locally, the products would be available immediately to meet the demands of a given country."

Another potential change in Mattel's

European business operations would involve coordinated book closings across all the affiliates, Harris continues.

But to implement such corporate applications, Mattel's international network would need a massive upgrade to support increased communications needs, according to Harris.

Currently, one big obstacle is that the networking bandwidth and services Mattel would need are only available in certain countries. However, there is hope that as 1992 ushers in a new era, "the barriers and restrictions that control communications across European borders will be modified to facilitate the European com-

mon market," Harris says.

A top priority on Mattel's list is uniformity of transport services among different countries, Harris says. Right now, each nation differs in terms of the amount of available bandwidth, types of services offered and pricing structures.

For example, Mattel currently connects its U.S. operations to Europe via satellite link to UK, which then fans out to other countries. Some of those countries support satellite links; others do not, requiring terrestrial connections, Harris says. Mattel would also like to be able to fill its trans-European networking needs through one vendor, instead of having to

deal with each Postal Telephone and Telegraph (PTT) authority individually, Harris says. "We would like to see some long-haul carriers that can cross borders without getting involved with PTIs, so from a worldwide control point of view, we would have fewer points of interface."

Mattel's international network is controlled from Phoenix, and Harris says that "if we have a line problem in France, we have to get involved with several different suppliers and vendors to pick up all the links."

"We would love some organization in Europe that says, 'I can lease you any bandwidth you want, anywhere you want,'" Harris continues. "We'd be having dinner with them right now, but they don't exist."



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Horwitt is a Computerworld senior editor, networking.



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mean faster recoveries at Rush-Presbyterian-  
St. Luke's Medical Center.

Chicago, Illinois  
May 4, 1989

Rush didn't want to just survive cost-cutting in the healthcare industry. They wanted to flourish. So to help them compete better, and treat their patients better, AT&T prescribed a distributed networked computing solution. Rush's Leo Henikoff, M.D., Bill Wellman, and AT&T's Dan Byers review the hospital's new Patient Care Information Network.

**Rush:** You know, it's been a tough time for hospitals. But even though 10 in Chicago have closed, we're doing well. Especially with the new system.

**AT&T:** Now that your information barriers are gone.

**Rush:** That's right. Before, no one was really linked up. Our doctors couldn't access clinical data and pharmacology on the same terminal. To make matters worse, some departments were actually duplicating data entry.

**AT&T:** But now many of your departments are networked. And not just those throughout your campus—but all over the Chicago area.

**Rush:** It's easier too, since it's one system now. Our AT&T 3B2 Computers make great file servers to our mainframes. And with your 6386 WGS desktops at the nursing stations, data is right at the end of a light pen. In fact, our residents say they're saving hours in run-around time.

**AT&T:** Don't forget about the AT&T StarLAN and StarGROUP network that link your Compaq and IBM PCs with the AT&T WGS computers.

**Rush:** Sure. Plus the AT&T ISN is the heart of our network. It links an

IBM 3083 for accounting, a VAXcluster for lab tests, a Tandem host for pharmacy records, and AT&T 3B2's. And because we move around so much, the ISN and AT&T SYSTIMAX PDS let us plug displays or PCs into any jack.

**AT&T:** So, do you think another solution would have had the same value?

**Rush:** Not really. There are viable alternatives out there. But AT&T is the most cost effective. Other vendors aren't really one-stop-shops either. You helped us integrate a very complex group of systems, trained us, plus you're always there for us. Now *and* when we expand.

**AT&T:** What about your clinical staff? Have they noticed the change?

**Rush:** Without a doubt. Our doctors and nurses can now spend much more time with patients since they have faster access to information. Bottom line, we feel good about going with AT&T.

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# COMPUTER INDUSTRY

## INDUSTRY INSIGHT

Paul Gillin

### Can you say 'finance'?

Every three months, American business goes through a chaotic little ritual known as the quarterly earnings report. As we all know, this is the time when highly paid accountants have the chance to come completely clean with the market, putting forth both the good and bad news that shareholders can use to make wise investment decisions. At these times the emphasis is on truth. Veritas, Pravda.

Well, maybe not completely. As a longtime reader of unadorned earnings statements, I have assembled a brief guide to financial-speak to help you find truth amid hyperbole. Statements are written first in English. English translations follow:

• **Opening lines:** "Wump Corp. today announced significantly higher revenue and profits for the quarter." *Everything's fine right here at Wump Corp.* "Wump Corp. today announced higher revenue for the

Continued on page 102

## Tweaking the 'ideal' merger

### ANALYSIS

BY NELL MAFOLOS  
CW STAFF

VIENNA, Va. — Forget the publicists. Last year's merger of systems software tools providers Morio Systems and Duquesne Associates, Inc. was so well-received that customers were singing around terms like "merger of equals" and "wedding of the year."

At a time when the urge to merge was suddenly sweeping the computer industry and creating more than one questionable alliance, a user of wars from both Morio and Duquesne said of the combination: "If they can't make it, no one can."

Eleven months later, former Morio founder/Chief Executive Officer and current Legent Corp. Chairman Mario Morio is

not about to contradict him. However, Morio told *Computerworld* in a recent interview, even in a dream marriage, merging is no endless honeymoon.

For starters, Morio said, there is no such thing as perfect compatibility. Morio and Duquesne, for example, shared goals, ethics and customers. However, Duquesne — together as one company for a longer, stable period of time — was centrally managed, "with an open flow upward for decision making." Morio, which had grown quickly through acquisition, tended toward decentralization.

"When we confronted each other," said former Duquesne Chairman/CEO and current Legent CEO Glen Chatfield, "we found that we had common views but very different ways of operating to reach them. The differences were bigger than we

thought they'd be." In Legent's case, Chatfield said, the problem turned into a plus: "It ended up driving consolidation faster," he said. Legent executives and



Legent's Morio says merging isn't an endless honeymoon

managers, determined to preserve the "ideal couple" image in fact as well as in print, sought expert help. They brought in as a

consultant Arnoldo Hax, deputy dean of MIT's Sloan School of Management. Among other measures, Hax guided 45 people, drawn from both the Morio and Duquesne camps, through a 2½-day motivational team-building meeting, followed up by intermittent meetings over a several-week period.

"We came out of that meeting with a coherent statement of direction for Legent," said President and Chief Operating Officer Peter Barria. In addition, he said, "People came away with respect for the other side — with a feeling of: Hey, they've got some good people, too."

Meanwhile, Morio said, even as the real differences were being addressed, the apparent difference between the wanted ideal merger mates became an issue in and of itself.

"Perception problems become real problems," he said. "Everyone worried about which way we'd go, what would happen. Continued on page 102

## Ashton-Tate looks to future with Dbase 1.1

BY CHARLES VON SIMSON  
CW STAFF

TORRANCE, Calif. — Even the news of one of the worst quarters in the company's history could not distract observers from the protracted vigil for the

birth of Ashton-Tate Corp.'s Dbase IV Version 1.1, which entered beta testing as the financials were announced recently.

As expected, Ashton-Tate announced dismal third-quarter results earlier this month, posting a \$19.4 million loss. But while

the financials were bleak, so observers were caught off guard. The company's troubles are old news, and everyone is simply waiting to see how Dbase Version 1.1 will play in the market once it is available.

"We were all expecting a lousy quarter, and we got one," said Thomas Galvin, who covers Ashton-Tate for Smith Barney, Harris Upham & Co., a New York brokerage. "The inventory problems are a visible, important problem, but the long-term issue

is the health of Dbase IV," Ashton-Tate stock remained steady on Wall Street. Analysts said they believe that prices had already been adjusted with the initial news of the Version 1.1 delays late this summer.

But the Dbase product line accounts for about 65% of Ashton-Tate's revenue. The newest version, Dbase IV, had been plagued both by software bugs in the initial release, and overreliance into the distribution channel.

Continued on page 106

## Q3 earnings show refusal to be stuck in market mire

BY NELL MAFOLOS  
CW STAFF

A heartening number of high tech companies have struck last week as third-quarter computer industry earnings reports sounded the theme that individual companies are finding ways to manufacture, market and partner their way beyond a generally sluggish market.

"Databases are commodity items these days," one Wall Street analyst said several weeks ago, explaining disappointing third-quarter prospects at Alameda, Calif.-based Relational Technology, Inc. That is probably not the prevailing market view, however, in Menlo Park, Calif., where Informix Corp., one of last year's wounded firms, is back in the high life again.

Chief Executive Officer Phil White credited several large contracts, including a huge OEM agreement under which Unisys Corp. will sell Informix products worldwide, with a third-quarter revenue boom that in turn fueled the company's 2,000% profit explosion.

Nor, apparently, are database makers a universal commodity. Teradata Corp., which this year topped *Inc.* magazine's list of the 100 fastest-growing small companies in the U.S., saw its third-quarter revenue jump 69% over last year's third-quarter sales figure, while third-quarter profits grew 57% in the year-to-year comparison.

Storage Technology Corp. is feeling less blue this quarter by feeling less blue, according to CEO Karl Poppe. Strong sales of 4400 Automated Cartridge Sys-

tem (ACS) tape products helped boost Storage Tek's profit by 1,283%, he said, adding that the company continues "to aggressively expand the market opportunity for the ACS library by introducing it into new, non-IBM computer environments." A third-quarter contract with Bull H. N. Information Systems is the most recent example.

Mentor Graphics rode counter-cyclical strengths to third-quarter jumps in both revenue and net income, CEO Thomas Braggner said. A marked high in sales and orders, he said, resulted from customers' embracing electronic design automation as a weapon to pit against a generally sluggish market.

For survivors of the recent shakeout, the disk drive niche is a comfortable address, according to analysts. Further validating their observations, Conner Peripherals, Inc. checked in with third-quarter revenue of \$184 million, up 17% from last year's.

Continued on page 102

### 1989 third-quarter earnings

Banner quarters for many companies question rumored slump

	1989 Third Quarter	1988 Third Quarter	% Change	1989 Third Quarter	1988 Third Quarter	% Change
Amdahl	\$534.3	15%	\$32.9	(37%) <sup>1</sup>		
Computer Associates	\$282	5%	\$9.6	(66%)		
Computer Sciences Corp.	\$371.7	34%	\$15.5	13%		
Controlware	\$22.1	17%	\$1.1	100%		
Control Data Corp. <sup>2</sup>	\$763	(9.3%)	\$9.8	—		
Conver Computer	\$41.3	50%	\$3.1	87%		
Cray Research	\$210.3	45%	\$36.6	36%		
Informix Software	\$37.2	57%	\$2.1	2,000%		
Mentor Graphics	\$96.4	24%	\$11.5	31%		
Storage Technology <sup>3</sup>	\$232.6	12%	\$8.3	1,283%		
Stratons	\$83.7	23%	\$8.4	15%		
Teradata <sup>4</sup>	\$42.96	69%	\$1.96	57%		
Wynne Technology	\$11.9	(8%)	\$3.0	—		

<sup>1</sup> Peripherals suffered decrease or loss. Includes results of Inperix, the disk-drive subsidiary sold to Digital Equipment Corp. at the end of the quarter.

<sup>2</sup> Financial statements for periods prior to May 90 have been revised to reflect pooling of interests with Amper Peripherals Corp.

<sup>3</sup> Includes \$44 million reduction of income taxes due to not expensing loss carried forward.

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# Pressure holds on Brazil trade

BY MITCH BETTS  
OF THE

WASHINGTON, D.C. — The Bush administration has dropped its official trade complaint against Brazil's protectionist "information" policy, but U.S. pressure on Brazil to open its computer and software markets to foreign vendors is expected to continue.

Industry groups such as the American Electronics Association said some progress has been made, but they urged the U.S. to undertake aggressive negotiations to remove remaining trade and investment barriers.

Ending the trade investigation will "create a more positive, relaxed atmosphere in which discussions to resolve outstanding issues can take place," said John L. Pickett, president of the Computer and Business Equipment Manufacturers Association (CREMA), in a statement.

U.S. Trade Representative

Carla A. Hills said the 4-year-old investigation was terminated on Oct. 6 because Brazil has relaxed some policies that restricted foreign access to its hardware and software markets. Brazil recently passed a law giving software copyright protection, allowed

some sales of U.S. software and will permit the revenue to be repatriated to the U.S.

Hills said further progress in software trade and other forms of market access will be pursued. To continue the bilateral discussions on informatics trade and in-

vestment, the U.S. and Brazil agreed to consult regularly, at least four times a year, she said.

Remaining issues of concern to the industry include the high tariffs for imported electronics products, widespread software piracy, restrictive foreign investment rules and regulation of technology-transfer contracts by Brazil's National Institute for Industrial Policy.

The Reagan administration had threatened to impose \$105 million in punitive tariffs but postponed the sanctions when negotiations with Brazil began to make some progress (CW, March 7, 1988).

Brazil began restricting high-tech trade in 1977 to protect its computer industry from foreign competition and allow domestic vendors to prosper.

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Technology which allows small satellite earth stations to transmit and receive voice, video, and data information in complete privacy helps smaller companies enjoy the advantages of satellite communication services. Hughes Aircraft Company has established and is operating earth station facilities which can be shared among many users as the central control point for their independent networks. When combined with Very Small Aperture Terminal (VSAT) stations using advanced transmission techniques, Hughes' shared hub facilities allow companies to quickly and cost-effectively establish their own private, customized, satellite-based business communications networks. The first three Hughes shared hubs are located in New York, Los Angeles and Minneapolis; additional sites will be added in the future.

A new radar maintenance facility will assist the Portuguese air force in the maintenance of three sophisticated air defense radar systems. Being built by Hughes, the Intermediate Support Facility (ISF) will include a Hughes HMC-193 Microcomputer Aided Tester for digital assembly test, and an Integrated Test and Logistic Support System, which does depot-level troubleshooting and repair of complex analog and radio frequency assemblies. Hughes is supplying the radars for the NATO Southern Region and Portugal (RSRP) Program, which supplies data to the Portuguese Air Command and Control System. The ISF will allow Portugal to autonomously maintain their radar systems.

A revolutionary three-dimensional architecture will result in an ultra-fast supercomputer that fits into the palm of a hand. A 3-D computer, under development by Hughes for the U.S. Air Force, uses a three-dimensional array of processors to achieve an extremely high degree of parallel processing. The array of processors is distributed vertically on integrated circuit wafers, stacked one on top of another, eliminating circuit boards, chip packages and connectors. This allows as much as 90 percent of the computer to be active silicon circuitry. Final versions of the computer will handle 100-billion operations per second for applications like image processing, radar signal processing, and space-based missions.

An advanced semiconductor packaging technology will permit maximum utilization of the next generation of integrated circuits. Using packaging techniques based on its high-density multichip interconnect (HDMI) technology, Hughes will design, develop, fabricate and deliver test modules and large-area multi-chip packages for the Naval Ocean Systems Center. HDMI uses fine-line integrated circuit processes to build the substrate circuitry in a hybrid package. The packaging technology is aimed at meeting the need for higher density modules that operate at high speed using very-large-scale integrated circuits.

Hughes Technical Services Company (HTSC™), a subsidiary of Hughes Aircraft Company, is rapidly expanding its contractor operations and logistics support to meet individual and customer program requirements. Upcoming military contracts to be supported by HTSC include simulations for the T-45 Golden Hawk, Fleet ASW Team Training and Landing Craft Air Cushion. HTSC presently needs engineers, programmers and field service technicians with experience in simulation in order to keep pace with new contract requirements. Qualified candidates may send resumes to: Hughes Technical Services Company, Trainer Support, Dept. 33, P.O. Box 90962, Long Beach, CA 90809. Equal opportunity employer. Proof of U.S. citizenship required.

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## Earnings

FROM PAGE 99

comparable period. Conner marked its 11th consecutive profitable quarter with \$11.8 million in net income, up 72%. The company also saw a quantum leap in international presence; responsible for 18% of last year's third-quarter revenue, international sales contributed approximately 57% of revenue for the quarter ended Sept. 30.

Continuing vitality in the microcomputer software sector powered Software Publishing Corp. past the \$100 million mark for the year. The Mountain View, Calif.-based company reported \$30.6 million in revenue for the calendar third quarter and its fiscal fourth quarter — a 28% increase over last year's comparable period. Profits for the business productivity software company increased 16.3%, to \$5 million.

On-line transaction processing is still words to ensure with Stratus Computer, Inc. reported third-quarter revenue up 22% to \$83.7 million and profit up 12% to \$4.4 million.

Also backing the age-old premise that the rich get richer, Comnet Computer Corp. reported revenue up 36% to \$68.3 million and net income up 51% to \$8.7 million for the quarter ended Sept. 30. Supercomputer player Convex Computer Corp. recorded its 20th consecutive quarterly revenue increase, as well as an 87% profit gain.

On a more sobering note, Cray Research, Inc. reported healthy quarterly increases but cautioned that the year-end picture is likely to be less rosy.

## Gillin

CONTINUED FROM PAGE 99

quarter." We're rather not talk about profits.

"Wump Corp. today announced its quarterly financial results. But you don't have to read them — really.

"Wump Corp. today announced a significant loss on a decline in revenue. If anyone is looking for a good investor relations person, please give me a call.

• **Rationalizations:** "This year has seen the company pursue many new opportunities. All our existing markets have dried up.

"We do business in a dynamic marketplace. The competition is beating our brains out.

"The decline in income was due to market shifts and changing foreign exchange rates. The competition and the Japanese are beating our brains out.

"The market continues to exhibit extreme volatility. Our executives are short-selling our own stock.

"Recent trends have been encouraging. The class action suit was dropped.

"The company continues to exhibit strong performance in its core markets. We aren't getting a new new customers.

• **Executive changes:** "Mr. Mudthing has resigned from the presidency to pursue other interests." It was in Mr. Mudthing's best interest to clear out his office.

"Mr. Mudthing has resigned for personal reasons." Mr. Mudthing was per-

sonally asked to clear out his office.

"Mr. Mudthing's resignation was by mutual agreement. Everyone agreed that Mr. Mudthing's office would look much better cleared out.

"The board of directors asked Mr. Mudthing to resign. About that class action suit...

• **Restructuring:**

"The intent of the reorganization is to make the company more responsive to our customers' needs. Our customers didn't need those 3,000 employees anyway.

"The reductions were made possible by significant economies of scale in the manufacturing area. There's no work to do.

"Mr. Mudthing will head up the new Middle East/Africa division. Where he will never be heard from again.

• **Chief executive quotes:** "We are a market-driven company. Our products stink, but we spend a lot on advertising.

"We are a technology-driven company. Our products are fine, but the marketing director is the CEO's nephew.

"Our design team is first-rate. Too bad the manufacturing people are a bunch of morons.

"The rumors that we are looking to be acquired are absolutely false. Everyone has turned us down already.

"I'm sorry to see Mr. Mudthing go at this time. I wish we had fired him before he mucked up everything.

Gillin is Computerworld's executive editor.

## Legent

CONTINUED FROM PAGE 99

pen." Here, as in all other aspects of smoothing the way from Duesenberry to Legent, the company's board of directors was an invaluable resource, Morino said.

"Joe Henson gave us a great insight," he said, mentioning the former CEO of Prime Computer, Inc. as just one of the several "active but not interfering" members of the board. What Henson recommended, Morino said, was a process by which the company's overall activities were factored into a list of discrete functional actions. "We then took each corporate officer and set out that person's function with respect to each separate action, asking: What does X do in Y instance — initiate, review, authorize or communicate?" The review process, Morino said, "didn't solve the whole problem — but it was a quantum step in the way."

Anxiety over big problems, including those that do not materialize, is only the second greatest pitfall for the newly merged, Morino said.

Looming even larger is the list of things no one would have thought to put on a list.

One such instance at Legent, Morino recalled, arose when a Morino developer started wearing a floor-length blue lab coat, unwittingly starting a fashion craze. "Before you knew it," the chairman said, "everybody wanted to order one — but they would have all had 'Morino' on them."

Too small an issue to bend large minds out of shape? Not during the tender time in which a merger is taking root, Morino said.

"Assume nothing about anything, regardless of how small it is," Morino cautioned. In the post-merger atmosphere, "anything can become a political issue, and usually does." Business integration committees are not likely to speed a lot of time worrying about what the new firm's

business cards are going to look like, Morino said — but that's as likely to stall the smooth integration of the merged firms as is a foreseeably major issue like which sales force handles what, and for whom.

With two populations trying to accustom themselves simultaneously to new identities, loyalties, assignments and work styles, not to mention employees, colleagues and bosses, Morino said, something akin to temporary paranoia

**I**N THE POST-MERGER atmosphere, "anything can become a political issue, and usually does."

MARIO MORINO  
LEGENT

pervades the firm. "If I sneeze, or Glenn, or Peter, suddenly there are 70 rumors about flu or colds — or death," he said.

What's more, since it is equally well-

known that acquisitions are a linchpin of Legent's growth plan and that Morino is Legent's point man in the acquisition arena, "cab drivers are always getting quizzed about my travel plans by people trying to figure out who I'm meeting with and what we might be looking to acquire." Since the "Sherlock syndrome" does not stop with cab-driving, Morino said, he had a shredder installed next to his desk at home.

To quell anxieties on a broader level, Legent has instituted the FYI program. Under this initiative, analysts' reports and other important information about the company are mailed to the homes, rather than the hectic offices, of some 50 key company personnel. "This counteracts one of the biggest fears after a merger," Morino said, "the fear that you don't know what's going on."



Morris Fowd  
respect for other side



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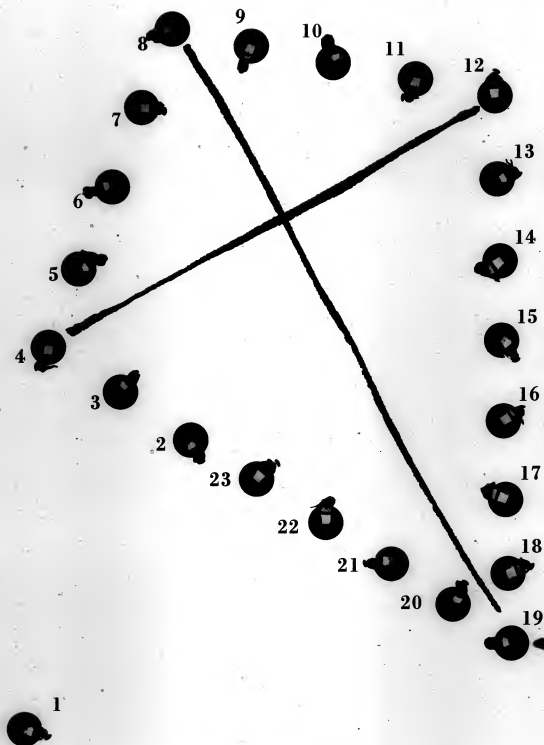
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## IN BRIEF

## Tie for first

Disgruntled Dataquest Corp. shareholder Martin S. Ackerman has filed a countersuit in U.S. District Court in N.Y. against Dataquest and its chairman, Asher B. Edelman. The suit alleges, among other things, that Edelman and Dataquest are deceiving shareholders and tainting Ackerman's solicitation process for the sole purpose of entrenching Edelman and the current board of Dataquest.

## Sun tops DEC exec

Seventeen-year Digital Equipment Corp. veteran Kevin Mella last week was named vice-president of worldwide operations at Sun Microsystems, Inc. Mella, 42, was vice-president of corporate distribution and materials at DEC and an officer of the company. He will assume his new post Nov. 7.

## Memories in motion

U.S. Memories, Inc. has chosen four finalists from among 57 on its list of possible headquarters sites. The joint venture of semiconductor makers and consumers will inspect sites in Austin, Texas; Colorado Springs; Middleboro, N.Y.; and Phoenix. The final site is expected to be chosen next month.

## Top of the heap

IBM was the picture of emergent systems integrator price last summer when it was the priced contract to manage Eastman Kodak Co.'s data processing operations. Last week, however, the company smiling for the camera was DEC, whose bid to manage Kodak's voice and data communications business edged out IBM's.

## A magnetic match

National Semiconductor Corp. has agreed to acquire Krynasil Corp., a developer of ferroelectric materials technology. The teaming will result in new memory products for the commercial and military nonvolatile memory marketplace, the chip maker said.

## Adios and good luck

Prime Computer, Inc. Chairman of the Board Russell Plautz earlier this month relinquished his director's seat at Miniscribe Corp., the Longmont, Colo.-based disk drive maker that was mired by fraud allegations last month [CW, Sept. 18]. Plautz, a general partner of venture capital firm J. H. Whitney & Co., said that his recently acquired Prime chairmanship prevents him from devoting the time required to serve at Miniscribe.

## Ashton-Tate

CONTINUED FROM PAGE 99

Ashton-Tate Chairman Ed Esber maintains that the channel is clearing and that new shipments will bolster fourth-quarter revenue. Sources close to the company said that Esber and senior executives are looking for a break-even point in the fourth quarter. "Clearly, Dbase has dominated our revenue," Esber said, "but since Feb. 1 we have not sold so much to the channel as through the channel."

The company, Esber said, has "sold twice as much through distributors as we have to them. The basic demand for the products has been healthy. We had overly ambitious plans, as did the channel."

Some analysts voiced an outlook less rosy than Esber's. Dbase demand does remain strong, they said, and the firm will continue to command about 45% of the PC database software units shipped through this year. "But for the moment they are a one-trick pony," said Nancy McSharry, PC software analyst at International Data Corp. in Framingham, Mass.

"When your strongest product is having significant problems, it takes a focused effort to get by it. They need to get a solid Version 1.1 out the door before they can get started on their next generation of products," she said.

The company is betting heavily that the problems will be corrected in the newest version, which will be shipped free to Version 1.0 customers.

In addition, Version 1.1 will have ties to larger machines and is designed to work with Ashton-Tate/Microsoft's SQL Server, which will allow communication with mini- and mainframe-based databases.

In an effort to provide a note of optimism, the company announced Dbase IV 1.1's entry into beta testing along with the fourth-quarter financials. Esber declined to specify the time frame for the test period.



Ashton-Tate's Esber

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## World watches as EC mulls software copyright directive

### ANALYSIS

BY MICHAEL CONNIFF  
SPECIAL TO C&EN

MONTREAL — The Council of Ministers of the European Community (EC) is on the verge of issuing a directive on copyright protection that could have profound consequences not only for the computer software industry in Europe but also for the software industry worldwide.

EC Council directives require member states of the European Community to change their laws to the extent necessary for compliance. The pending European Community countries at the end of 1992 gives the directive process all the more urgency.

At the heart of the proposal for the directive is the contention that software should receive the same protection across national boundaries as "books, films, music recordings or industrial design, if re-

search and investment in computer technology are to continue at a sufficient level to allow the Community to keep pace with other industrialized countries."

#### Sets example for the world

"The directive could hardly be more important," said Douglas E. Phillips, president of the Business Software Association (BSA), a Washington, D.C.-based trade group representing major domestic software publishers. "It will affect all key aspects of software protection for the European Community in the foreseeable future, and it sets an example for the rest of the world. I'm sure what happens will be cited in China and in other countries."

While the match between software and copyright law, originally scripted to cover

media that differ from software in many aspects, has been attacked as less than ideal, the current laws bring with them a distinct pragmatic advantage. "The nice thing about copyright protection," said J. Jancin Jr., IBM's counsel for intellectual property law, "is that it is here — and it is here now."

The disposition of several prickly issues of contention remains to be resolved by Dec. 14, when the Council of Ministers, the primary legislative body of the European Community, is scheduled to adopt its directive on copyright protection.

Among the areas still in question are the enforcement of the directive within EC countries; the establishment of "originality," the inclusion of "interface protection" in copyright protection; the right to control "restricted acts" such as reproduction and adaptation; the extension of protection to the ubiquitous "shrink-wrap" agreements between publisher and user; the length of copyright protection; and the proposed exclusion from copyright protection of "the logic, algorithms or programming languages" underlying a software program.

In addition, reverse engineering has emerged as a bone of contention that has placed IBM and the major national soft-

## SOFTWARE PIRACY is a major problem in Europe.

DOUGLAS E. PHILLIPS  
BUSINESS SOFTWARE ASSOCIATION

were trade groups — which vehemently oppose the practice — against Fujitsu and NCR, among other hardware manufacturers.

"Reverse engineering is a misnomer when it is applied to computer programming," Jancin told the attendees at the Software Publishers Association conference, held in Montreal earlier this month. Phillips agreed: "We don't want to see anything introduced that says reverse engineering is permissible."

Software publishers in the U.S. are worried about particularly aggressive piracy in EC countries. As Phillips said at the SPA session on copyright protection, "Software piracy is a major problem in Europe." He said printed copies of such programs as Lotus Development Corp.'s Lotus 1-2-3 and Ashton-Tate Corp.'s dBase II account for 50% of usage in some EC countries, with the percentages growing even higher in Italy, where Phillips said 186 complaints have been lodged based on illegal software use. The BSA claimed that "software copying by large organizational users in Italy causes aggregate losses to software companies in the hundreds of millions of dollars each year."

Major industry groups such as the BSA and the SPA, also based in Washington, D.C., have replied aggressively to the proposed directive with their own comments. On Oct. 5, they were both among 18 national software trade groups and corporations — from nine countries in Europe and the U.S. — who signed a "common statement" laying out changes necessary for the harmonization of copyright laws regarding software, regardless of national boundaries.

Conniff is a Burlington, Vt.-based writer.

# for Microcom finished.



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# MARKETPLACE

## The path to a system purchase

Get help from other departments to send your way to a complete contract

BY MICHAEL ERESCHLOS  
SPECIAL TO ENR

Buying a computer system is not a simple process. Evaluating one involves not only assessing technical requirements but also weighing vendors' capabilities, the financing options and contractual requirements.

A system purchase will eventually involve several departments in your company. The purchasing, legal, risk management and financial offices will all play a role, and you should welcome their involvement. With their expertise, you can alleviate many of the management headaches that are inherent in the acquisition process.

Most buyers will follow one of two paths. The majority are committed to a single vendor and need only to select a system compatible with their architecture that meets the requirements for number of users, storage capacity and similar considerations. Other buyers can consider several vendors that can meet their requirements.

Commitment to one vendor simplifies a system purchase but still leaves much work in negotiating contracts. Reviewing several vendors calls for comparing

contracts, which prolong the evaluation and negotiation.

Regardless of the situation, the time for negotiating contract terms and conditions is before accepting a bid. You will lose considerable negotiating power if you award a contract before all the terms and conditions are agreed upon. Then, it is important to review the contractual options offered by each vendor during the evaluation process.

### Contract basics

System purchase contracts vary, but all of them should address the following points:

- The description and specifications of the system should be detailed. This is your opportunity to ensure that vendors understand exactly what you are buying. The contract should describe each piece of equipment, including optional features.

- The contract should include the total price as well as the costs of individual items. If you are eligible for any discounts, be sure the prices reflect them. The need for detail in this section cannot be overstated.

- Many systems have ongoing costs, such as software licensing fees. The contract should cover all immediate and future costs. It should detail the vendor's policy

for fee increases and include the cost of upgrades for the operating system and other software.

- The contract also should specify maintenance requirements and costs. You should require a detailed breakdown of the services and their prices. This

**R**EGARDLESS of the situation, the time for negotiating contract terms and conditions is before accepting a bid.

should include turnaround time on service calls and the vendor's responsibilities.

- The contract should specify warranties, including their duration, coverage and, again, turnaround time for service calls.

Installation can be a major expense. Your contract should specify who pays for what. Do not forget about cables, power supplies, cooling systems and phone lines for diagnostic modes.

The need for other environmental items, such as a raised computer room floor, should also

be specified in the contract. The descriptions should be as detailed as possible and spell out which party bears responsibility and costs for each item.

If you already have a system, you will probably need to port or convert existing programs to the new one. If you expect the vendor to do such work, it must be stated in the contract. If your vendor guarantees portability, be sure to get the guarantee in the contract, along with descriptions of the vendor's liabilities for shortcomings.

The delivery date is very important. Get written commitments for it and be sure your computer center can be ready for delivery on that date.

### Trade-ins and incentives

With competition among computer vendors on the rise, many of them have been offering incentives for buying or upgrading systems. They have offered attractive trade-in packages as well. If you are taking advantage of such offers, get that in the contract. This is especially true of trade-in allowances and special pricing for future upgrades. Be sure that the contract details other discounts that you are eligible for in the future, too.

A final note: You should spend time with representatives of the various departments in your company that will be involved in the acquisition before negotiating a contract. You should get their input on additional items to

include. They might have encountered problems with particular vendors in the past. They may also be able to educate you about negotiating strategies and things to look for in contracts.

You should always have your legal department or attorney review contracts before the final negotiations and the signing. There are several steps during the process for which your legal counsel may want to be present. Keep your attorneys informed of negotiations.

A detailed, well-negotiated contract can provide you with a computer system that will meet your company's needs and perhaps even cut its operating costs. An ambiguous, poorly negotiated contract, on the other hand, could increase costs and delay installation and conversion.

Ereschlos is executive editor at Computer Economics, Inc. in Carlsbad, Calif.

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XT Model 089	\$1,025	\$1,400	\$950
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AT Model 239	\$1,700	\$2,100	\$1,700
AT Model 339	\$1,825	\$2,000	\$1,700
PS/2 Model 50	\$1,525	\$2,000	\$1,500
PS/2 Model 60	\$2,700	\$3,300	\$2,500
Compaq Portable 1	\$975	\$975	\$925
Portable 11	\$1,300	\$1,700	\$1,200
Portable 12	\$6,000	\$6,000	\$6,000
Portable 280	\$1,300	\$1,600	\$1,200
Plus	\$700	\$1,000	\$675
Shogun 200	\$6,000	\$6,000	\$1,700
Shogun 280	\$2,800	\$2,800	\$2,800
Apple Macintosh 512	\$550	\$650	\$300
512E	\$625	\$925	\$600
Plus	\$1,000	\$1,150	\$750
II	\$3,225	\$4,175	\$2,500
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Request for Proposal No. 1078, due Thursday, November 8, 1989 at 2:30 p.m. for the acquisition of a small HP-2000 based computer system with a 2075 gateway to the IBM members of the State Computer Center for the MISSISSIPPI CENTRAL DATA PROCESSING AUTHORITY.

Proposals should be submitted to the CPDA office. The CPDA reserves the right to reject any and all proposals and to waive all formalities.

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Copies of the original invitation to submit proposals may be obtained from the State of Maine, Department of Public Safety, 100 State Street, Augusta, ME 04302-2011.

A proposal conference is scheduled for 8:30 a.m. on Wednesday, November 8, 1989 at 111 South Main Street, Portland, ME 04101.

The Financial Information Services, Agency, of the City of New York, is requesting that qualified vendors submit a proposal for a Large Mainframe Processor Copies of the RPT are available for all those interested. For further details, call Mr. Monaghan at (212) 206-2111.

A pre-proposal conference is scheduled for Thursday, November 8, 1989 at 2 P.M. at 111 South Main Street, Portland, ME 04101.

The deadline for submission is response to the RPT and to the tender, November 21, 1989 at 5 P.M.

Further details regarding the conference, specifications and proposals information may be found within the RPT.

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# TRAINING

## Who will you call on for help?

Options include brokers and vendors, whose expertise often goes unused

BY MARK DUNCAN  
SPECIAL ADVERTISING

At any point in time, somewhere in an information systems organization, a training manager stops dead in his tracks, raises up his hands, and shouts "Help!" He may be the novice who has just realized what he has taken on; he may be a veteran repented at the failure of problem-solving measures that worked well in the past; or he may be the typical manager fighting a losing battle for sufficient resources to do his job properly.

At such times, it can be appropriate to enlist the help of training consultants. Such consultants come in a variety of shapes and sizes and can supply as much or as little assistance as necessary. They range from sole practitioners to sizable divisions of Fortune 500 corporations.

A consultant can bring objectivity and accumulated experience to this type of situation. He may recognize symptoms in a failing training function that he has diagnosed and remedied before. A training manager, for example, is apt to blame failure simply on student disinterest or a teacher's lack of skills. A con-

sultant may offer a more penetrating analysis; he may identify such causes as inappropriate training media, courses that are too difficult or too easy for the audience in question or instruction that is not pertinent to people's jobs.

Not only can consultants provide an objective point of view, but they can also mobilize resources that may be unavailable to the average training manager. For example, a consultant might be better prepared to conduct an analysis of training needs; the rate of change of technology today requires more frequent needs analyses to keep curricula current.

### Unexpected methods

Finally, training consultants can offer particularly creative solutions to problems. A computer timesharing and consulting company, for example, was suffering from excessive antipathy between salespeople and the technical support staff. The problem was resolved only after a training consultant suggested that the salespeople attend a technical training class and the technical staff join a sales class. The salespeople and technical work-

ers acquired a greater appreciation for each other's activities, making them happier and less likely to jeopardize business success.

Some vendors of training materials and services are ready to

respond in specific ways for conventional needs. However, the manager who needs extra help should investigate whether additional services such as needs analysis are available to him as a customer, or ask about different ways of getting things done. When tapped effectively, training vendors can help realize extraordinary results.

Some independent practitioners offer both consulting and

tween the client and vendors, allowing the client to choose among a number of vendors. If, for example, an IS manager wanted to provide training in Cobol II, a broker could research and negotiate arrangements with several training companies, check references and allow the client to make the final choice. The search could be based on specific client needs, such as timing, budget or customization.

The brokers' services sometimes extend to course auditing, whereby the broker attends part of a course to evaluate it or determine whether an instructor is acceptable for a client.

Brokers might offer these services at no charge to the client, and some arrange for training at reduced rates. One firm claims it can cut training costs by 20% to 30% while responding quickly to unplanned demands from clients. The firm maintains surveillance over available training so an individual in need of instruction in DB2, for example, can be enrolled in a class that is about to begin.

Even if training managers don't call out for help, they can get frustrated. When old solutions do not work, fresh approaches are required, and the manager may be too close to the situation to supply them.

Duncan is a quality assurance consultant at a large Dallas bank.

**T**HE MANAGER who needs extra help should investigate whether additional services such as needs analysis are available to him as a customer.

respond to the training manager's distress with consulting services. Naturally, these organizations are interested in selling their products and services; even vendors requiring prepaid contracts are anxious for credits to be spent. But by providing services, such as a customized needs analysis, vendors can save training managers some legwork. The reputable training companies are not interested in taking the customer's money and running; they wield consulting services as tools to help cement long-term relationships.

Over time, training managers become accustomed to using

training services, emphasizing flexibility that may be harder to come by in dealing with a large company. One consultant I know who specializes in project management will lend a project for a client as a consultant while training one of the client's employees to succeed her in that role.

Another relatively small consulting firm emphasizes the value of "one-stop training," under which a manager can deal with one person, whether to describe training needs or discuss billing for services.

An additional option for the manager is a training broker, who acts as an intermediary be-

## COMPUTERWORLD's November Training Editorial Topics

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Executive Report  
Keeping up with service expectations  
Ad Close: Oct. 31
- 13** "Critical incidents" can assist in training assessment  
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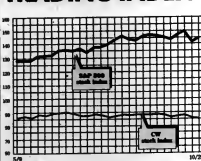
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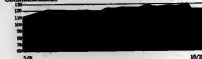
The Safe Buy.

## STOCK TRADING INDEX



<i>Indices</i>	<i>Last Week</i>	<i>This Week</i>
Communications	123.4	123.4
Computer Systems	85.2	85.5
Software & DP Services	113.5	114.4
Semiconductors	53.3	51.4
Peripherals & Subsystems	77.1	78.1
Leasing Companies	107.7	104.4
Composite Index	86.4	85.8
S&P 500 Index	143.9	145.0

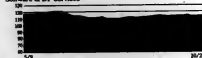
## Communications



## Computer Systems



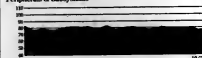
## Software &amp; DP Services:



## Semiconductors



### Peripherals & Subsystems



### Leasing Companies



## Computerworld Stock Trading Summary

CLOSING PHOTO WEDNESDAY, OCT. 26, 1994

PRICE			
52-WEEK RANGE	CLOSE OCT. 29, 1990	WEEK- HIG CHANGE	WEEK- LOW CHANGE

### Communications and Network Services

[illegible]

### Computer System

[illegible]

### Software & DP Services

[illegible]

## Semiconductors

11	ADV MICRO DEVICES INC	13	7	8.125	-0.3	-1
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### Peripherals

ALCOY CORP	9	1	1.75	0.7	0.7
ALCOY CORP	10	1	0.0	0.0	0.0
ALCOY CORP	11	1	0.0	0.0	0.0
ALCOY CORP	12	1	0.0	0.0	0.0
ALCOY CORP	13	1	0.0	0.0	0.0
ALCOY CORP	14	1	0.0	0.0	0.0
ALCOY CORP	15	1	0.0	0.0	0.0
ALCOY CORP	16	1	0.0	0.0	0.0
ALCOY CORP	17	1	0.0	0.0	0.0
ALCOY CORP	18	1	0.0	0.0	0.0
ALCOY CORP	19	1	0.0	0.0	0.0
ALCOY CORP	20	1	0.0	0.0	0.0
ALCOY CORP	21	1	0.0	0.0	0.0
ALCOY CORP	22	1	0.0	0.0	0.0
ALCOY CORP	23	1	0.0	0.0	0.0
ALCOY CORP	24	1	0.0	0.0	0.0
ALCOY CORP	25	1	0.0	0.0	0.0
ALCOY CORP	26	1	0.0	0.0	0.0
ALCOY CORP	27	1	0.0	0.0	0.0
ALCOY CORP	28	1	0.0	0.0	0.0
ALCOY CORP	29	1	0.0	0.0	0.0
ALCOY CORP	30	1	0.0	0.0	0.0
ALCOY CORP	31	1	0.0	0.0	0.0
ALCOY CORP	32	1	0.0	0.0	0.0
ALCOY CORP	33	1	0.0	0.0	0.0
ALCOY CORP	34	1	0.0	0.0	0.0
ALCOY CORP	35	1	0.0	0.0	0.0
ALCOY CORP	36	1	0.0	0.0	0.0
ALCOY CORP	37	1	0.0	0.0	0.0
ALCOY CORP	38	1	0.0	0.0	0.0
ALCOY CORP	39	1	0.0	0.0	0.0
ALCOY CORP	40	1	0.0	0.0	0.0
ALCOY CORP	41	1	0.0	0.0	0.0
ALCOY CORP	42	1	0.0	0.0	0.0
ALCOY CORP	43	1	0.0	0.0	0.0
ALCOY CORP	44	1	0.0	0.0	0.0
ALCOY CORP	45	1	0.0	0.0	0.0
ALCOY CORP	46	1	0.0	0.0	0.0
ALCOY CORP	47	1	0.0	0.0	0.0
ALCOY CORP	48	1	0.0	0.0	0.0
ALCOY CORP	49	1	0.0	0.0	0.0
ALCOY CORP	50	1	0.0	0.0	0.0
ALCOY CORP	51	1	0.0	0.0	0.0
ALCOY CORP	52	1	0.0	0.0	0.0
ALCOY CORP	53	1	0.0	0.0	0.0
ALCOY CORP	54	1	0.0	0.0	0.0
ALCOY CORP	55	1	0.0	0.0	0.0
ALCOY CORP	56	1	0.0	0.0	0.0
ALCOY CORP	57	1	0.0	0.0	0.0
ALCOY CORP	58	1	0.0	0.0	0.0
ALCOY CORP	59	1	0.0	0.0	0.0
ALCOY CORP	60	1	0.0	0.0	0.0
ALCOY CORP	61	1	0.0	0.0	0.0
ALCOY CORP	62	1	0.0	0.0	0.0
ALCOY CORP	63	1	0.0	0.0	0.0
ALCOY CORP	64	1	0.0	0.0	0.0
ALCOY CORP	65	1	0.0	0.0	0.0
ALCOY CORP	66	1	0.0	0.0	0.0
ALCOY CORP	67	1	0.0	0.0	0.0
ALCOY CORP	68	1	0.0	0.0	0.0
ALCOY CORP	69	1	0.0	0.0	0.0
ALCOY CORP	70	1	0.0	0.0	0.0
ALCOY CORP	71	1	0.0	0.0	0.0
ALCOY CORP	72	1	0.0	0.0	0.0
ALCOY CORP	73	1	0.0	0.0	0.0
ALCOY CORP	74	1	0.0	0.0	0.0
ALCOY CORP	75	1	0.0	0.0	0.0
ALCOY CORP	76	1	0.0	0.0	0.0
ALCOY CORP	77	1	0.0	0.0	0.0
ALCOY CORP	78	1	0.0	0.0	0.0
ALCOY CORP	79	1	0.0	0.0	0.0
ALCOY CORP	80	1	0.0	0.0	0.0
ALCOY CORP	81	1	0.0	0.0	0.0
ALCOY CORP	82	1	0.0	0.0	0.0
ALCOY CORP	83	1	0.0	0.0	0.0
ALCOY CORP	84	1	0.0	0.0	0.0
ALCOY CORP	85	1	0.0	0.0	0.0
ALCOY CORP	86	1	0.0	0.0	0.0
ALCOY CORP	87	1	0.0	0.0	0.0
ALCOY CORP	88	1	0.0	0.0	0.0
ALCOY CORP	89	1	0.0	0.0	0.0
ALCOY CORP	90	1	0.0	0.0	0.0
ALCOY CORP	91	1	0.0	0.0	0.0
ALCOY CORP	92	1	0.0	0.0	0.0
ALCOY CORP	93	1	0.0	0.0	0.0
ALCOY CORP	94	1	0.0	0.0	0.0
ALCOY CORP	95	1	0.0	0.0	0.0
ALCOY CORP	96	1	0.0	0.0	0.0
ALCOY CORP	97	1	0.0	0.0	0.0
ALCOY CORP	98	1	0.0	0.0	0.0
ALCOY CORP	99	1	0.0	0.0	0.0
ALCOY CORP	100	1	0.0	0.0	0.0

### Leasing Companies

AMPLICOR INC.	118	11	13	-0.4	-3.0
CAPITAL ARBORE INT'L INC.	8	4	4.75	-0.3	-0.2
COMMERCO INC.	34	19	30.875	1.1	0.8
CONTECH INT'L INFO SYS	4	0	0.344	0.1	-18.3
LDI CORPORATION	16	17	17.75	0.3	1.4
PHOSPHORUS AMERICA INC.	4	0	0.0	0.0	0.0
	4	0	7	-0.8	-0.4

EIGHTH—NEW YORK A—AMERICAN O—NATIONAL

## Hard ball

**Investors take their lumps  
as firms play hard to get**

The World Series resumed at the end of last week, as did the not-so-glowing earnings reports from technology firms. Investors struck out, with Compaq Computer Corp. and Microsoft Corp. at the top of the lineup.

Compaq lobbed up a good-looking pitch, announcing a 51% increase in third-quarter profits, but that was lower than analysts had expected. Compaq closed Thursday at 100, down a sharp 9% points. Microsoft, which hit a high point two weeks ago, fell prey to profit taking, dropping 21% to close at 77%.

Also suffering a down week were Unisys Corp., Tandy Corp., Apple Computer, Inc. and Sun Microsystems, Inc. Unisys reported a \$600 million loss for its third quarter (see story page 1); its shares closed at 17, down 1 1/4 points. Tandy announced it would not be joining U.S. Memories, Inc., the chip consortium formed to compete with overseas semiconductor firms. Tandy fell 2 points to close at 43 1/4. Apple's final-quarter earnings were not up as high as analysts had hoped; it slipped 2% to finish at 45 1/4. Despite a glowing first-quarter earnings report, Sun's shares closed at 17 1/4, off 1 1/4 points.

Digital Equipment Corp. and IBM faltered along with other high-tech issues. DEC fell 1 1/4 points to close at 88, and IBM dropped 3/4 points to finish at 100 1/4. Motorola, Inc. and Intel Corp. also slumped. Motorola slid 3 1/2 points to close at 55 1/4; Intel dropped 2 1/4 points to end at 32.

JOSEPH L. FATTON

## Defense

FROM PAGE 1

Management, could lead to the consolidation of the multiple accounting, payroll, inventory and personnel systems run by each of the military services.

For example, the U.S. Army, Air Force, Navy, Marines and the Defense Logistics Agency each has developed its own warehouse information systems, according to William J. Sharkey Jr., head of production and logistics systems.

"This management initiative is going to be accompanied by some kind of budget whammy, as well," Sharkey predicted.

Speaking at last week's Federal Computer Conference, Sharkey said DOD program managers must give high priority to improving IS management at a time when DOD's budget is being cut and the Bush administration is instituting management reforms.

In an Oct. 4 memo, Atwood

said that "there appears to be a need to improve the standardization, quality and consistency of data from DOD's multiple management information systems."

DOD should stop developing and maintaining multiple systems to meet the same functional requirements, Atwood said. Atwood called for the following actions to implement the Corporate Information Management program over a generally unspecified time frame:

- An executive-level advisory group of IS experts from inside and outside DOD will be formed to recommend corrective actions.
- The information resources management staff — part of the DOD comptroller's office — will draft a management plan for the program.
- DOD efforts in each functional area, such as warehousing or payroll, will begin this week to form "function groups" to study compatibility and redundancy issues and develop standard data formats.

## NSF cuts supercomputer grant

BY ELLIS BOOKER  
OF STAFF

PRINCETON, N.J. — The Consortium for Scientific Computing knew it was betting on a dark horse in 1984 when it selected ETA Systems, Inc., as the supercomputer vendor for its John von Neumann National Supercomputer Center (JVNC).

The bet was lost two weeks ago when the National Science Foundation (NSF) said it would not renew its five-year grant to the JVNC, which ends next April. Meanwhile, the NSF has renewed funding requests from the four other supercomputer centers in funds, none of which used ETA equipment.

ETA Systems parent Control Data Corp. abruptly folded its money-losing subsidiary and left JVNC with two of the world's seven liquid nitrogen-cooled ETA10 supercomputers.

The Consortium, which is made up of 13 participating universities, quickly redrafted its supercomputer program and in June proposed replacing the larger ETA10 with an eight-processor V-MP supercomputer from Cray Research, Inc. in Minneapolis. That proposal was rejected this month, although the group said it will ask the NSF to reconsider.

Consortium members reacted strongly to the withdrawal of support. Under its cooperative

agreement with the NSF, the center's funding for fiscal year 1990 is \$15.4 million.

"I disagree strongly with that view [that] the NSF program centers are just four walls and a roof to keep the rain off a machine," said Doyle Knight, president of the consortium. Knight described the JVNC as a "national resource" and said that its education and training program — some 1,500 users have been trained in the past 3½ years — illustrates its value.

"In retrospect, the decision to fund JVNC in 1984 with an ETA [system] was the right decision," said Thomas Weber, division director of advanced scientific computing at NSF in Washington, D.C. However, he continued, "Everyone realized how risky it was... it was a paper machine that looked good in 1984."

### More access

Weber said academic researchers now have substantially more access to supercomputers than in 1984. "We count 30 state and local centers that have supercomputers," he said. Since 1984 there has been an 80% increase in the computer cycles available to academic researchers, and the expected systematic capacity of the four remaining centers will be twice what it was with five centers, Weber said.

However, Knight challenged

this assessment of the nation's supercomputing capacity. He noted that NSF's own peer review panel had recommended that the five-year JVNC grant be renewed.

All but one of the four remaining NSF-backed supercomputer facilities uses Cray equipment: Cornell University has two IBM 3090 600s equipped with IBM's Vector Facility, which is loosely coupled in parallel so that researchers can use all 12 processors at once.

### Steering grantees?

Does the decision on JVNC mean that NSF plans to steer its supercomputer grantees away from certain vendors, even ones with promising technology?

"We have no policy, no stated policy. They can propose whatever they want," Weber said. However, he confirmed that supercomputers from Japanese vendors have not appeared in grants coming into the NSF.

"Remember," Weber said, "the original goal was to stimulate the U.S. [supercomputer] industry," and it was therefore "consistent" to go with ETA Systems five years ago.

The JVNC's grant from the NSF expires on April 30, 1990. The center has been given a six-month extension of the grant so that it can make an orderly phase-down of its operation, according to the NSF.

## Discovery of 486 bugs may slow initial PC shipments

BY RICHARD PASTORE  
OF STAFF

Intel Corp.'s 80486 chip, the breakthrough powering upcoming high-profile personal computers from several manufacturers, has a couple of screws loose.

Intel disclosed last week that two flaws were found in the chip's floating point processor. The bugs can cause machines to falter on tangent, cosine and sine calculations, which would primarily affect computer-aided design and scientific applications rather than business applications.

An Intel spokesman said the company will begin developing a revised chip this week, and it will be late November before quantity shipments are available.

Meanwhile, some vendors said the flaws will not affect their 486 rollouts.

### No bug encounters

An IBM spokesman said that no users of its 486 plug-in card for Personal System/2s has reported encounters with the bugs. However, the company has temporarily halted shipments while it evaluates the problem. It has no plans to recall the product, he said.

A spokesman at Compaq Computer Corp. said Compaq discovered the flaws while testing its 486-based machines, which were poised for launching on Nov. 6.

The spokesman said Compaq will still announce on schedule, but the shipment of product will

depend on when Intel delivers the corrected chips.

"We were going to be shipping that day," the spokesman said, "but we don't want to let [machines with] flawed chips out the door."

## FCC launches broad review of AT&T

BY MITCH BETTS  
OF STAFF

WASHINGTON, D.C. — Alfred C. Sikes, chairman of the Federal Communications Commission, ordered a broad review of competition in the long-distance market last week to determine if AT&T operations should be further deregulated.

Sikes told the FCC's Common Carrier Bureau to have a regulatory proposal ready by the end of the year. In essence, the proceeding will determine whether AT&T should continue to be classified as a "dominant" long-haul carrier whose tariffs — such as Tariff 12 for large custom networks — must be heavily regulated.

In a separate action, the FCC upheld the legality of Tariff 12, although AT&T's competitors said they will continue to fight it in the courts.

George R. Dellinger, telecommunications analyst for Washington Analysis Corp., predicted that "AT&T will be found nondominant and will be provided a much greater degree of

competitive latitude in 1991." If AT&T were found to be no longer dominant, it would receive the relatively lax regulation now accorded MCI Communications Corp. and U.S. Sprint Communications Co.

For example, it could provide new services in about two weeks, Dellinger said. Many business users support the idea of a review of the long-distance market, but they are not unanimous about the merits of AT&T deregulation. Some are wary of giving AT&T more flexibility than it already has under the "price caps" regulatory regime (CW, Sept. 25), while others have complained about AT&T's regulatory shield.

Georgia-Pacific Corp. in Atlanta recently switched from AT&T to MCI after criticizing service delays caused by the lengthy tariff approval process for AT&T. Paul Provoff, Georgia-Pacific's senior director of information resources, said in a letter to the FCC that "artificial limitations which exist in today's

marketplace should be abolished so all carriers are equally free to compete."

In a recent speech, Sikes said the reappraisal is necessary because AT&T "has been relinquishing market share by about 3.3% on average for the last five

years," business markets are fiercely competitive and the regulatory process is being exploited by AT&T's competitors.

The three other members of the commission welcomed the broad proceeding, after expressing frustration with trying to address such major policy issues in the context of tariff investigations.

## Tariff scrutiny

FCC Chairman Alfred C. Sikes announced the regulatory review in the midst of commission deliberations over Tariffs 12 and 15, which AT&T has used to counter competition from MCI and other carriers.

The FCC decided to confirm its April decision allowing Tariff 12 to remain in effect as long as the network services are made available to multiple customers (CW, April 17). The ruling threw out objections filed by the Independent Data Communications Manufacturers Association and Williams Telecommunications Group, Inc.

The FCC wanted AT&T and its business customers that the commission will closely examine Tariff 12 offerings "to ensure they do not disguise unreasonably discriminatory offerings."

In addition, the FCC ruled that AT&T must discontinue its Holiday Rate Plan, which provides telephone service to Holiday Rate Plan's hotel chain at discounts of up to 10%. The FCC did not ban Tariff 15 competitive pricing plans but said that the single-customer discount for Holiday no longer merits an exemption from the federal policy against discriminatory services.

MITCH BETTS

# DEC rewrites mainframe role

BY MARYFRAN JOHNSON  
CW STAFF

BOSTON — The winking hour for Digital Equipment Corp. arrived a week before Halloween, as the company that made its fortune selling miniside machines rolled out five new models of the mainframe VAX 9000.

## Climb to the top

DEC's VAX 9000 series takes the company into new realms of processing power

	1	2	3	4
Model 9000-1	Model 9000-2	Model 9000-3	Model 9000-4	Model 9000-5
Microchannel Architecture	Microchannel Architecture	Microchannel Architecture	Microchannel Architecture	Microchannel Architecture
Performance (MIPS)	1.0	2.0	3.0	4.0
Price (\$100,000)	\$1.50	\$1.80	\$2.10	\$2.40

\*As compared with VAX 11/780

SOURCE: DIGITAL EQUIPMENT CORP.

The treats tumbling out of the big-iron VAX were souped-up CPU speed, greatly expanded I/O throughput and bandwidth and mainframe-capacity memory that hits 512M bytes.

The trick will be training a sales force schooled in minis on how to sell mainframes.

No problem, said Ken Olsen, DEC's president. "We've been making machines that rise from the first part of Digital," he said. "Today, the definition of a main-

frame is changing from batch processing to on-line transaction processing."

The machine will not begin shipping in volume until spring 1990, when the entry-level VAX 9000 Model 210 is due. It will be at least another year before the top-of-the-line Model 430s and 440s are available.

multivendor, distributed environments — especially in newer application areas where IBM has not had a chance to be dominant.

"The 9000 is not only going to sell well in the accounts running out of gas, but it will help DEC sell more VAXs," said John McCarthy, an analyst at Forrester Research, Inc. in Cambridge, Mass.

"Thus gives their technology a shot in the arm, and that will reflect well in competitive bids with IBM and Hewlett-Packard."

DEC claimed its low-end Model 210 is roughly comparable in performance capabilities to the IBM 3090 Model 1805 — although it is supposed to cost about half of what the IBM

machine sells for.

Yet, the most important issue for an installed base of 15,000 high-end VAX systems is the fully compatible architecture of the 9000, which will run any and all of the 6,500 existing VMS applications.

The most radical change in the VAX architecture is the addition of the System Control Unit (SCU), a crossbar switching device that sits at the heart of the machine and acts as a high-speed (2G byte/sec.) conductor for data flowing between the CPU, memory and I/O controllers.

"The SCU is completely transparent to the users," said Peter Ross, product manager for the 9000. "The programmer doesn't have to write any in-

DEC also introduced a host of associated products (see story at right), including a long-awaited vector processor for VAX 6000s as well as the 9000.

The announcement also heralds DEC's entry into the supercomputing market, Olsen said. Once its vector processor is added, the new machine will meet federal government supercomputer specifications.

DEC is positioning its mainframe to fill a widening space in

ing functions on IBM mainframes.

"It was until I see some performance numbers," said Mike Beardslee, MIS director at the Utah-based Thiokol Corp., which uses Vaxclusters for distributed and central processing.

"That was significant in my mind was that DEC has the opportunity now to sell to the business world," Beardslee said.

Thiokol, which manufactures aerospace equipment, just emerged from a corporate split this summer with Morton International. The corporate headquarters and its associated computer equipment went along with Morton, leaving Thiokol to build up its own, Beardslee explained.

The appearance of the DEC mainframe at last puts the company in the running to fill that void, the MIS director said, since the combined capabilities of high throughput and enhanced storage capacity make the VAX 9000 "a true mainframe."

## Backup vocals

A new version of RDB was tucked away among DEC's hardware announcements last week. RDB Version 3.1, scheduled for December availability, adapts additional ANSI-standard SQL features as well as most new functionality aimed at transaction systems. It is not, however, considered a major release.

Referential integrity support was enhanced with the inclusion of "triggers" in order to define related data that must be acted on based on a delete or update action. On-line backup as well as restore can now be done by users, allowing more flexibility and control. RDB can be backed up on compact disc/ready memory.

Other related announcements include the following:

- Vector processors — Integrated vector processors for the VAX 9000 and VAX 6000 Models 410-440 to increase compute-intensive processing speeds up to 10 times. Prices range from \$25,000 to \$87,000. Available summer 1990.
- EKM70 disk and tape controller — a single-host disk and tape controller providing local access to the VAX 9000 KMI bus at rates up to 700 I/O requests per second. Priced at \$23,700. Available spring 1990.

- VAX Disk Striping Driver — Enables parallel execution of multiple requests for data by spreading applications and user data over several disk drives. Available in December for all VAXs except the Microvax 3100.

- CXCDC High Performance Interface — A single-mode I/O interface that can improve Vaxcluster system I/O performance up to four times faster than current CCI interfaces. Priced at \$35,000. Available spring 1990.

- VAX System Management Software — New products include DEC's Data Center Monitor for operations management and V-X PACS from UIS, Inc. for resource accounting and chargeback. Available spring 1990.

MARYFRAN JOHNSON

## First course of 9000's VMS offers little nourishment

BY MARYFRAN JOHNSON  
CW STAFF

When it finally starts shipping in volume next spring, the VAX 9000 will have its own field-test version of the VMS operating system. However, aside from a vector processing facility, the earliest VMS version will contain few new features.

The first trickle of operating system enhancements will be in the transaction processing arena, company officials confirmed last week.

"The big card for them with this system is the VMS compatibility," said Raymond Moss, deputy director for computers and communication at the U.S. Air Force Logistics Command (USALC) in Odessa, Utah.

The USAF operation runs several Digital Equipment Corp. machines, both as stand-alones and in clusters, in Moss' department. Yet, like so many commercial sites, the USAFLC runs most of its business and account-

ing functions on IBM mainframes.

"I wait until I see some performance numbers," said Mike Beardslee, MIS director at the Utah-based Thiokol Corp., which uses Vaxclusters for distributed and central processing.

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## Software AG stretches its range

BY AMY CORTESE  
CW STAFF

ANAHEIM, Calif. — Software AG of North America, Inc. last week continued its efforts to broaden its product range with a variety of offerings, including an alternative to IBM's AD/Cycle.

The product announcements for both the Digital Equipment Corp. VAX and IBM environments occurred as 2,200 users gathered for the annual Software AG user conference.

Among the highlights was the introduction of the Predict CASE repository and development environment. Predict CASE has been available on IBM mainframes in Europe for two years, and with the U.S. debut of Version 2, a personal computer-based front end has been added.

While Software AG is com-

mitted to supporting IBM's AD/Cycle framework, "there is room to offer alternative tool sets," said Tim Wild, Software AG vice-president of product marketing.

Many customers have been using Software AG's Predict data dictionary and Natural fourth-generation language (4GL) since they became available in the early and mid-1980s.

Fred Frudden, manager of data administration at pharmaceutical concern A. H. Robins, said that the Predict data dictionary "is far superior to anything IBM offers. AD/Cycle is no far down the road, we have no plans to even address it yet."

The Natural 4GL was also the focus of new developments. An OS/2 version was announced that provides a development and execution environment for that

platform. Interfaces to DEC's RDB and RMS database management systems were also added to Natural for VAX environments.

Potential markets for the big VAX include large research and development labs or commercial sites where mergers or acquisitions have expanded the need for decision-support systems. Several analysts predicted that DEC's sagging revenue will not get a substantial boost from 9000 sales until at least 1991.

Yet, in a few years, DEC and IBM may well meet head-to-head on newer applications fields, several analysts said.

Additionally, Software AG expanded its line of data center management software with Natural Console, an automated console management system, and Natural ISPF, a development and system utilities tool for IBM mainframe environments. A communications software package called Net-way AFPC also provides IBM's Advanced Program-to-Program Communication-type communications across different environments, rounded out the entries.

All the products are slated for general availability in the first quarter of 1990 and vary in price according to platform and configuration.

## Mainframe

FROM PAGE 1

on IBM mainframes, and we consider ourselves to be an IBM shop," said Robert Tanner, senior vice-president of the trust and financial services business unit at Northern Trust Co. in Chicago. "However, our VAX installation is bigger. We have more processing, disk storage and memory on the VAXs. But we have more development people on the IBM, where our core accounting system is."

The Royal Bank of Canada has long used Tandem systems for specific banking operations. The bank will likely upgrade to the new mainframe in the future, but it will not be considered for host operations.

"We think of it as a big switch because it front-ends our transaction processing systems," said Greg Pruden, manager of techni-

high-end business."

What is unclear, is how much of a piece DEC and Tandem will get. Because observers say the chances are slim for the two to replace IBM hosts, the companies' potential revenue gains cannot be measured by the current market revenue totals.

Datquest, Inc. estimates that the mainframe market will grow by 4.5% in 1989, nearly \$30 billion in revenue. But to say that DEC or Tandem could grab a tiny slice of that \$30 billion could be misleading because, when they spoke of how they would use a DEC or Tandem system, users were often referring to specialized operations that have yet to be developed.

"I would consider Tandem if we got into an applications area that would fit them, like high-volume transaction processing," said Gary Gage, director of data center services at Teco Energy Co. in Tampa, Fla. "If it were a

## IBM unleashes 3090 J line

BY ROSEMARY HAMILTON  
OF STAFF

NEW YORK — IBM would apparently like to remind the industry that it is the mainframe company of record.

With two newcomers stepping into the mainframe market, IBM last week trotted out 16 new 3090s as well as software targeted at the heart of mainframe operations, batch processing and system security.

Although the software was warmly received, IBM customers contacted last week had a hunch they view the 3090 J performance. They view it as little more than a modest increase in performance.

The overall boost is 7% to 14%, achieved by tweaking the processor's cycle time and dosing the cache site. Beyond that, the new mainframes offered little new technology.

## Worth noting

The most noteworthy hardware item was the 4M-bit chip on the high-end J models. It is IBM's first use of the chip in its mainframe line, and it boosts the maximum processor memory from 2.5G bytes to 4.5G bytes.

IBM's mainframe reboot included an asymmetrical capabilities for central storage on the new processors and enhancements to PR/SM, its mainframe partitioning capability.

The new batch-processing software, however, is another story. Users applied IBM's move to provide a quicker way to run batch jobs.

"I'll put it in just as quickly as it's available," said David Moore, senior vice-president of information processing at Mel-

large system to hang onto its high-end customers.

"Clearly, a company like Digital realizes that being forced to share account control with a competitor is not going to help them sell other systems in the long term," said Peter Barria, head of IBM research at International Data Corp.

Senior *Walter Margraf* Johnson contributed to this report.

lon Bank in Pittsburgh.

The Hyperbatch software, in conjunction with new microcode called the Move Page facility, is designed to reduce batch-processing time by as much as 60%, according to IBM. The company will make it available as a no-cost component of a new release of ESA announced last week and due out by year's end. Hyperbatch will work with the new J models as well as the midrange and high-end models in the 3090 Series.

The software is IBM's latest facility to take advantage of the company's Hyperpace concept, a key component of the ESA operating system that opens up the on-processor storage to the multiple gigabyte range.

Hyperbatch will allow users to move huge chunks of data for batch processing to the processor, which will eliminate the time spent going out to disk to retrieve data. In addition, the Move Page facility is designed to move data more quickly from the Hyperpaces in expanded storage to central storage for execution.

"I think the 60% is a real stretch, but it could be true for someone who hasn't spent much time fixing their batch operations," Moore said. "But if I can get in the range of 25% to 30%, I will be absolutely overjoyed."

However, users contacted last week could not be described as overjoyed about the new features. Nobody was disappointed, and they naturally welcomed the performance boost. But users also said there was little that knocked them out about the J models.

"There was nothing earth-shaking about this," said Jack Cooper, president of CSX Technology, which provides IS services to CSX Corp. "We'll be looking to move to a J the first of the year."

However, IBM is counting on moving J models well before the beginning of the year. The company said it would be ready to ship 13 of the 16 models by the end of last week, and analysts said that IBM is hoping the new mainframes will bring a well-needed boost to its fourth-quarter sales.

"We have no solid evidence that there's been a downturn in sales, but they wanted the J's shipping to make it easier to close deals," said Peter Burris, head of IBM research at International Data Corp. in Framingham, Mass.

Some users and analysts speculated that IBM wants to move away from the S models because of their history of technological problems.

## Serving the S

At the same time, it does not want to officially cancel the product line in case it runs into shipment delays with J models. If that were to happen, IBM could provide S models to hold customers over until J models become available.

IBM said it will continue to sell S models and will not reduce their prices. Interestingly, the J models have nearly the same price tags, which leave little, if any, incentive to buy a new S model. For instance, the 3090 Model 400J will sell for \$9,884,000, while a 400S sells for \$9,885,000.

In addition, users with S models on order reported that IBM was switching them to J models.

"We were anticipating purchasing an S upgrade, but we'll look closely to the J now," said Greg Ehlers, vice-president of information services at Teco Energy Co. in Tampa, Fla. "Our feedback is that anyone with an S on order automatically gets the J. I guess that nails the coffin shut on the S."



DEC's mainframe features air-cooled CPUs

cal support at the Royal Bank, of his Tandem installation. "As far as we're concerned, there are three mainframe vendors: IBM, Amdahl and NAS."

However, such clear barriers didn't deter DEC and Tandem. Users and analysts said last week that both companies have been driven to the high end because it represents one of the last remaining sources of growth and high-profit margins.

The marketplace is moving in two directions, either to high-end systems or low-end," said Frank Gens, an analyst at Framingham, Mass.-based IDC Financial Services Corp. The midrange seems to be a no-man's-land. So, DEC and Tandem need to aim for a piece of

brand-new system were implemented. I'd consider it. If it involved a conversion from the 370, I wouldn't consider it."

But users and analysts suggested last week that companies like DEC and Tandem are willing to go after these futures because of the potential big money.

"What's key here is the economics that IBM has enjoyed," said Jack Cooper, president of CSX Technology, the IS arm of CSX Corp. "If they can get in and establish themselves, they can enjoy that high-profit margin, or at least one with a good return."

For DEC specifically, the mainframe introduction was seen by many as a no-choice move. Observers said the company was forced to bring out a

## Splitting the series

The IBM mainframes introduced last week show the company's intent to split the 3090 product line and target the systems at different sophistication levels, observers said.

Most of the new mid-range features, such as Hyperbatch, the enhanced PR/SM and the maximum 4.5G bytes of processor storage, are available on Models 160J and above. Low-end models are priced competitively, but they do not have the new features.

The entry-level J model, which sells for \$830,000 and does not support the advanced features, is in the 4381 price range, said Frank Gens, an analyst at IDC Financial Services Corp.

"IBM has finally responded to the fact that low-end customers have historically paid the worst price/performance because the low end was paying for all the advanced technology that the higher-end customers needed," Gens said.

The 3090 J introduction included a new twist in the way IBM sells mainframes. Three special low-end systems, called JH models, will be available in late 1990. They will be priced slightly higher than the corresponding J models and will offer most of the new J features introduced for higher-end models.

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Computerworld (ISSN 0893-4641) is published weekly except for a single combined issue at the last week in December and the first week in January of 1989 by C/P Publishing Inc., 275 Cushman Road, Box 8171, Framingham, Mass. 01701-8171.  
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## TRENDS



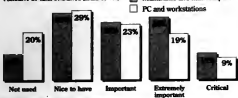
## Multivendor Services

A single vendor servicing all your computers regardless of their make offers a definite convenience. Trouble is, most users don't know enough about the programs to commit to them.

### Importance of single-vendor responsibility

The majority of both large and small computing environments say single-vendor responsibility is nice to have, but more than 30% of the respondents with mainframes and minis indicated that it was either extremely important or even critical.

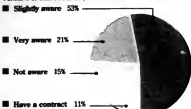
PERCENT OF RESPONDENTS (BASE OF 789)



### Awareness of multivendor service programs

Over half the respondents realize that vendors offer programs that will service other vendors' machines, but they do not have all the details. Thirty-two percent are either well aware of the program or already have a contract.

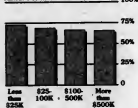
PERCENT OF RESPONDENTS (BASE OF 789)



### Fewest planning to increase single-vendor reliance by budget

Across the board, over half of the respondents in all budget brackets indicated they would be increasing their single-service reliance. Smaller firms more so than larger firms.

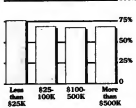
PERCENT OF RESPONDENTS (BASE 643)



IBM BUSINESS SYSTEMS CORP., ARMONK, N.Y.

### PC Workstation

PERCENT OF RESPONDENTS (BASE 572)



IBM BUSINESS SYSTEMS CORP., ARMONK, N.Y.

## NEXT WEEK

**H**ype has threatened to overcome hypertext ever since author/visionary/bipolar Ted Nelson published his seminal book, *Computer Lib/Dream Machines*, in 1974. In hypertext more than a facade with no building! In Depth looks beyond the hype at issues, trends and the development of Ford's hypertext-based diagnostic system.



MARK FISHER

**F**ord's revamped supplier-rampup procedure and Rubbermaid's new order processing system have much in common. They involved corporate procedure rethinking; they were enabled by information technology; and their tales were told at Hammer Forum '89. Read about them and other IS business transformations in Manager's Journal.

## INSIDE LINES

### Aftershocks

The aftershocks have subsided in the Bay Area, but watch for them to hit earnings reports in the next quarter. Chip manufacturer VLSI Research in San Jose, Calif., says work time lost because of the temblor may result in a loss of as much as \$149 million. And that could grow. Vendors up and down the Silicon Valley are testing and retesting manufacturing equipment jolted by the quake and may not know the full financial repercussions for weeks.

### Long-distance hackers

U.S. Sprint has been so successful in warding off hackers out to steal the long-distance carrier's authorization codes that the hackers are now targeting their "phreaking" activities on private branch exchanges (PBX) operated by businesses and government, according to Bob Fox, U.S. Sprint's vice-president of corporate security. Hackers break into private telephone switches to place long-distance telephone calls that are billed to the PBX owner. The break-ins were not discovered until the fall arrived, he said. U.S. Sprint is testing a new program aimed at educating business customers about telecommunications fraud.

### Can you cope with COPICS?

Users of IBM's COPICS will "not exactly jump for joy" to learn that the new version of the CICS-based MRP and manufacturing control system, announced last week, provides no migration path from the old, according to Richard Miller, an IS director at a Westinghouse group who heard the bad news from a colleague who attended IBM's CIM announcement. While the new version actively provides features that users have hitherto had to write themselves, it's cost current users about half a million to get it, Miller estimated.

### Just in case?

We all know that Lotus is no fan of Microsoft's Windows, preferring to put its eggs in the Presentation Manager basket. But all its eggs? A source close to both communities claims that Lotus has a team of 40 programmers working on a range of Windows projects — just in case, of course.

### This LAN is DEC's LAN, sometime

DEC is big on getting the most mileage possible from pre-delivery product announcements — it spent the last three years announcing Decnet OSI Phase V over and over again; and no, it's still not available. Well, DEC is expected to reaffirm its support for OSI/2 LAN Manager again at Microsoft's LAN Manager announcement next week. A week later, at a separate DEC briefing, sources say to look for the unveiling, although not necessarily the delivery, of VAX/VMS Services for OSI/2, which will have LAN Manager support.

### Got a sec? Here's 60 million instructions

Mips Computer Systems is expected to turn up the heat in the reduced instruction set computing market this week with the rollout of a chip that can perform up to 60 million instructions per second — about three times the speed of its current chips.

### What's good for the goose...

While Bertold CEO Philippe Kahn cleaned up a shattered office less than five miles from the quake's epicenter, a message appeared on Microsoft's electronic bulletin board that read: "Unlike Brand X (GRIN), the earthquake can't affect Microsoft. Because of our diversified staff, even the eruption of Mount Rainier can't shut us down. We're still here to answer your questions." Microsoft officials have since apologized, saying the act was the product of a lone customer service representative. Pretty tasteless, but then again, Kahn was the prankster who slipped copies of a magazine with negative Lotus stories under the doors of attendees at a PC industry conference last year.

*We don't dwell on the temblor here; it just seems that's the type of dope people like to find us. But we're always open to tasteful news, so long as we can get our teeth into it. Contact News Editor Pete Bartelme at 800-343-6476.*



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